



Environmental Impacts of Water-Based Activities in Phuket Marine Tourism

Vipaporn Thongphong

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Business Administration in Hospitality and Tourism Management**

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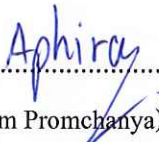
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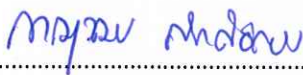
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Vipaporn Thongphong

ชื่อวิทยานิพนธ์	ผลกระทบทางสิ่งแวดล้อมที่เกิดจากกิจกรรมทางน้ำของนักท่องเที่ยวทางทะเลในจังหวัดภูเก็ต
ผู้เขียน	นางสาว วิภาพร ทองผ่อง
สาขาวิชา	การจัดการการบริหารและการท่องเที่ยว (หลักสูตรนานาชาติ)
ปีการศึกษา	2558

บทคัดย่อ

การท่องเที่ยวที่มีกิจกรรมทางน้ำได้เพิ่มจำนวนขึ้นอย่างรวดเร็วในภาคใต้ของประเทศไทยโดยเฉพาะอย่างยิ่งในฝั่งทะเลอันดามัน ความต้องการที่จะเข้าร่วมกิจกรรมทางน้ำในจังหวัดภูเก็ตได้มีการเพิ่มขึ้นตามจำนวนนักท่องเที่ยวที่เข้ามาในจังหวัดภูเก็ต การท่องเที่ยวแห่งประเทศไทย (ททท) ได้รายงานว่าจำนวนนักท่องเที่ยวที่มาเยือนจังหวัดภูเก็ตมีเพิ่มขึ้นทุกปีซึ่งส่งผลให้มีการเพิ่มจำนวนของผู้ประกอบการการท่องเที่ยวเพื่อที่จะตอบสนองความต้องการของนักท่องเที่ยว การพัฒนาธุรกิจการท่องเที่ยวอย่างรวดเร็วทำให้เกิดการละเลยที่จะปกป้องสิ่งแวดล้อมเพราะผู้ประกอบการท่องเที่ยวมุ่งมั่นที่จะขยายฐานลูกค้าเพื่อที่จะสร้างกำไร โดยที่ไม่ได้คำนึงถึงผลกระทบทางลบที่เกิดกับสภาพแวดล้อมทางธรรมชาติซึ่งเป็นสิ่งดึงดูดนักท่องเที่ยวให้เข้ามาทำกิจกรรมทางน้ำ การขาดความตระหนักด้านสิ่งแวดล้อมหรือผู้ประกอบการการท่องเที่ยวมีความรู้หรือข้อมูลในการปกป้องหรือรักษาธรรมชาติไม่เพียงพอทำให้เกิดผลกระทบที่เป็นอันตรายทั้งทางตรงและทางอ้อมต่อสิ่งแวดล้อม งานวิจัยชิ้นนี้จะพิสูจน์ให้เห็นว่าสภาพแวดล้อมทางธรรมชาติที่มีความอุดมสมบูรณ์มีความสำคัญต่อธุรกิจการท่องเที่ยว

ผู้วิจัยได้ทำการศึกษาในจังหวัดภูเก็ตโดยรวมถึงเกาะที่รายล้อมซึ่งอยู่ในบริเวณของจังหวัดใกล้เคียงแต่มีการจัดโปรแกรมการท่องเที่ยวโดยผู้ประกอบการการท่องเที่ยวที่อยู่ในจังหวัดภูเก็ต โดยการสัมภาษณ์เชิงลึกต่อผู้ประกอบการการท่องเที่ยวที่มีการจัดกิจกรรมทางน้ำจำนวน 16 บริษัท และได้มีการสำรวจแบบสอบถามจำนวน 410 ชุดจากนักท่องเที่ยวที่มีการร่วมกิจกรรมทางน้ำ

วัตถุประสงค์ของงานวิจัยคือตรวจสอบ ศึกษา สถานที่ที่มีการทำกิจกรรมทางน้ำ รวมถึงความรู้ความเข้าใจทางด้านสิ่งแวดล้อมของนักท่องเที่ยวและผู้ประกอบการการท่องเที่ยว และงานวิจัยนี้ได้มีการแนะนำ วิธีการปฏิบัติและสร้างแรงจูงใจให้แก่ผู้ที่มีส่วนได้ส่วนเสียที่จะอนุรักษ์ รักษาและปกป้องทรัพยากรธรรมชาติที่มีคุณค่า

ผลการวิจัยแสดงให้เห็นว่า ความตระหนักถึงพฤติกรรมที่มีผลกระทบต่อสิ่งแวดล้อมที่มีคุณภาพและประสิทธิภาพในหมู่ผู้ประกอบการการท่องเที่ยวและนักท่องเที่ยวมี

ความจำเป็นที่จะต้องกระทำอย่างเร่งด่วน โดยเฉพาะอย่างยิ่งปัญหาเกี่ยวกับเรือประมงที่ทำให้เกิดความเสียหายและทำลายบริเวณแนวประการัง โดยเมื่อมีการใช้อวนจับปลาในบริเวณห้ามจับปลาหรือแนวประการัง การศึกษาครั้งนี้แสดงให้เห็นอย่างชัดเจนว่ามีความจำเป็นอย่างยิ่งที่ภาครัฐทั้งในระดับท้องถิ่นและระดับประเทศต้องเข้ามาเกี่ยวข้อง เพื่อประยุกต์ใช้ หรือนำมาใช้ สร้างกฎระเบียบหรือออกกฎหมายเพื่อแก้ปัญหาในส่วนนี้ ผู้ประกอบการการท่องเที่ยวมีความตั้งใจที่จะอนุรักษ์และรักษาสภาพธรรมชาติทางทะเลและสิ่งแวดล้อมแต่ได้รับความสนับสนุนจากภาครัฐในระดับท้องถิ่นและระดับประเทศไม่เพียงพอ งานวิจัยนี้ได้นำเสนอปัญหาต่างๆ และข้อเสนอแนะเพื่อที่จะนำไปใช้ในการแก้ปัญหาต่างๆ การอบรมและให้ความรู้ในหมู่ผู้ประกอบการการท่องเที่ยวและนักท่องเที่ยวมีความจำเป็นอย่างมาก ผู้วิจัยเชื่อว่าการศึกษานี้จะกระตุ้นให้ผู้ที่มีส่วนได้ส่วนเสียโดยเฉพาะอย่างยิ่ง องค์กรภาครัฐ ท้องถิ่น และระดับชาติมีส่วนร่วมโดยตรงในการอนุรักษ์ความยั่งยืนของทรัพยากรทางธรรมชาติที่มีคุณค่า และสามารถดึงดูดนักท่องเที่ยวมาจากทุกมุมโลกซึ่งนำมาถึงเศรษฐกิจและรายได้ของประเทศ เพื่อที่จะเก็บไว้เป็นมรดกของลูกหลาน โดยที่เราจะต้องรักษาไว้ให้มีความอุดมสมบูรณ์และยั่งยืน

คำสำคัญ: กิจกรรมทางน้ำ สภาพแวดล้อมทางธรรมชาติ ผลกระทบต่อสิ่งแวดล้อมจังหวัดภูเก็ต

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ABSTRACT

Water-based tourism is a rapidly increasing in Southern Thailand, especially on the Andaman coast. Demand for water-based activities in Phuket has increased correspondingly with the increase in tourist visits. The Tourism Authority of Thailand (TAT) has reported the number of tourists visiting Phuket has continued to increase every year, which increases the number of tour operators required to meet the needs of tourists. The rapidly developing tourism business does not make enough effort to protect the environment; the tour businesses' focus is almost exclusively on expanding their customer base and making money regardless of the negative consequences to the natural environment that initially attracted the tourists. This lack of environmental awareness and little or no protective information from the tour operators causes both direct and indirect detrimental impacts on the environment. This study will prove that a healthy, clean and natural environment is vital to the tourism business.

This study is based in Phuket province but also includes various locations in adjacent provinces, which are visited by stakeholders based in Phuket. Face-to-face, in-depth interviews were conducted with the tour providers of 16 companies based in Phuket and 410 questionnaires were collected as data from tourists pursuing water-based activities.

The objectives of this study are to examine what water-based activities take place in the study area and to understand the environmental awareness of both tourists and tour operators using and providing those services. Finally, this paper will recommend methods and practices to motivate stakeholders to conserve, sustain and protect this valuable natural resource.

The results have shown that there is a good awareness of the importance of effective and beneficial environmental behaviors among tour operators and tourists. There is, however, a need for urgent action. This is particularly true concerning commercial fishing boats which cause large-scale damage and directly kill large areas of coral when fishing nets becoming

entangled on coral reefs. The main results in completing this study show clearly that there needs to be much greater government involvement, both local and national, in the application and enforcement of existing regulations and further studies are suggested that will recommend additional regulation and legislation. There is a willingness among the tour operators to do more to conserve and sustain the natural marine environment. This willingness should be exploited. Many of the tour operators strongly feel they lack the support and direct help that they should receive from local and national government. The recommendations in this paper directly address this problem and suggest many ways this can be achieved. There are additional recommendations that address problems with overcrowding, littering and the fact that more education and training is required, both among tour operators and tourists. There are recommendations that more studies be conducted, for example, to determine which tourist locations (scuba-diving sites and mangrove forests) urgently require to be closed to all touristic activities and given a chance to recover naturally.

The researcher believes this study will motivate stakeholders, particularly local and national government organizations, to become more directly and proactively involved in ensuring the conservation and sustainability of this beautiful and valuable natural resource. The marine environment attracts many tourists, from all over the world. This brings a very large revenue for Thailand. It is a legacy for our children which we must ensure we leave in a natural, healthy and sustainable condition.

Keywords: water-based activities, natural environment, environmental impacts, Phuket

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LIST OF ABBREVIATIONS AND SYMBOLS

Freq.	Frequency
%age	Percentage
cont.	Continue
PADI	Professional Association of Diving Instructors
TAT	Tourism Authority of Thailand

CHAPTER 1

INTRODUCTION

1.1 Background

A self-sustaining, healthy environment is now increasingly understood to be the most important resource for tourism. Tourism depends upon a clean environment. This can be a major tourism attraction in itself (Holder, 2000). During the post second-world-war period and particularly since the beginning of mass tourism in the 1960s, the relationship between tourism and environment has become unbalanced (Mason, 2008). A naturally vibrant environment enables and promotes more recreational activities that are also economically viable: this, however, increases the potential for negative impacts on that environment and, if not managed correctly, could harm or even destroy the natural environment, as well as any associated economic potential.

Currently, there are a wide range of niche tourism, sport, leisure and recreational experiences, which provide tourists, sportspersons, and people at leisure and recreationalists with many different choices for them during non-work time. These include adventure tourism, sport tourism, recreational tourism, event tourism, marine tourism, national park tourism and “sun sea and sand” tourism. All of the activities are undertaken in different environments such as subterranean, terrestrial, water-based, aerial, and virtual environments as well as combinations of these.

Phuket Island is one of the most popular destination beach towns in Thailand (Kasikom Research Center, 2012). Located on the east coast of Thailand on the Andaman Sea, Phuket is one of the world’s most attractive tourist destinations and is known as ‘The Pearl of the Andaman’. The geography of Phuket is 70% mountainous. This varied coastline offers many different, attractive beaches and small islands which are good for water-based activities such as swimming, snorkeling, diving, yachting, jet-skiing and deep water fishing, to mention just a few.

Demand for water-based activities in Phuket has increased correspondingly with the increase in tourist visits: the Tourism Authority of Thailand (TAT) has reported that the number of tourists visiting Phuket has continued to increase from 3.37 million in 2009, to 5.47 million in 2010, 9.46 million in 2011 and 10.79 million in 2014. This increase occurred at the same time as new technology made water-based tourism more accessible to more, and more diverse, tourists.

An example of one of these “new” activities is the “Sea Walker”. “Sea-walking” is an activity that uses a supply of air pumped from the surface to an underwater “hood” at a depth of about 5 meters. Tourists can walk on the sea floor while safely breathing air. “Sea-walking” became an issue because the activity adversely affected the coral reef ecosystem: in some areas tour operators destroyed the coral to clear paths through the reef for the convenience and safety of the tourists. Some tour operators also encourage tourists to feed the indigenous fish, which is recognized to have an adverse effect on their feeding habits: “Deliberate and long-term provision of food to wildlife has been shown to alter natural behaviour patterns and population levels. It has also resulted in the dependency of animals on the human-provided food and their habituation to human contact” Orams (2002). Some motorized watersports like jet-skiing not only generate noise pollution, which disturbs other tourists in the same area, but can also be injurious to the tourists: the high speed at which these craft can travel can cause serious accidents: from November 2009 to February 5, 2010 Jet Ski operators in Phuket made 109 claims from their insurance policies (Phuketwan Reporters, 2010). The safety of tourists should also be included in the concept of a properly managed tourism environment.

Water-based activities have presented both opportunities as well as threats to local communities, creating particular concern amongst people committed to sustainable management practices. Careless behavior, lack of environmental awareness and non-ecologically friendly practices by tour operators, tour guides and tourists can destroy and cause degradation to the environment, thereby also degrading any associated economic potential.

1.2 Statement of Problem

Water-Based tourism is a rapidly increasing activity in Southern of Thailand, especially on the Andaman coast. Phuket province is famous for beaches and coral reefs that make marine activities such as scuba diving, snorkeling, fishing, kayaking, etc. very appealing for tourists. All of these activities and tours are directly connected and dependent upon a self-sustaining and healthy environment.

The rapidly developing tourism business does not make enough effort to protect the environment; the tour businesses’ motivation are almost exclusively focused on expanding their customer base and turning a profit, regardless of the negative consequences to the natural

environment that initially attracted the tourists. At the same time, the number of tourist visits every year is increasing and this lack of environmental awareness, together with little or no useful protective information occasionally given by the tour operators, causes both direct and indirect detrimental impacts on the environment. For example:

Cruising: the low quality of the vessels used, their bad practices and their poor upkeep cause environmental damage to the delicate, and therefore vulnerable, coral reefs. Almost all of the craft used for tourism operations do not have proper storage systems for wastewater and sewage and therefore, directly flush harmful waste into the sea; fuel leaks and spills are released from tourist boats with many boats being simply converted fishing boats (Sethapun, 2000) and therefore are not “built for purpose”.

Motor boating: these generate noise pollution and disturb wildlife, especially waterfowl and other bird life, which results in adverse effects on feeding, nesting and breeding.

Snorkeling: snorkeling, especially from speedboats, is very popular with many tourists with the result that the snorkeling operating companies have expanded their businesses by deploying more and more boats. This increases the number of tourists, which in turn creates greater adverse environmental impacts. Among the problems seen are increased garbage; tourists feeding fish (Orams, 2002); snorkelers physically damaging the coral and removing shells to take home for souvenirs. There is a lack of understanding and knowledge about the harm these activities create. In addition, many tour operators do not use properly placed buoys to moor their boats. They drop their anchors directly onto the reef, thereby causing more unnecessary and permanent damage to the ecosystem.

Scuba Diving: the number of scuba divers is increasing every year and careless divers adversely affect marine ecosystems. The most common damaging diving activities include breaking the coral with the divers swimming fins touching the coral; divers touching the coral with their hands or resting against the delicate substrate; diving equipment touching the coral and direct damage caused by dive-boat anchors being dropped directly onto the reef (Lindgren, Palmund, Wate, and Gossling, 2008).

Kayaking: From previous studies (Gray, 1999 cited by Hudson and Beedie, 2007) in Phang Nga Bay it has been reported that kayaking will disturb wildlife at all levels because of badly managed tourists paddling through mangrove forests. Loud noises and the careless disposal

of rubbish in and around the mangrove forest and wildlife feeding areas, all create significant disturbance and quickly damage and impair the resident flora and fauna.

For example, in Phuket it has been frequently commented that many fishing nets have been found on the top the coral reefs in dive sites where fishing is prohibited in those areas. Other examples are: speedboat tours often carry too many tourists, this is a safety issue as well as increasing the amount of trash left on the beach on Phi Phi Island; oil spills and dirty oil discharge into the sea from the tour boats, fishing boats and some large cruise liners, all of which has a very damaging effect on flora and fauna. The growth in the tourism industry generates substantial extra income for tour operators and the local economy. With this, however, comes neglect for the pristine natural environment and these areas become commercialized for profit and short-term gain and destroy the very things the tourists have paid to visit and enjoy.

The direct consequences of this type of unregulated activity reveals an urgent need for education, control and regulation at all levels, local and national and possibly international to protect these areas. A concerted effort is required to raise environmental awareness among all stakeholders (tourists, tour operators and the local population). Sustainable environment management practices are urgently required from all stakeholders to conserve and preserve the quality of the natural environment and therefore the economic viability of these valuable resources that contribute so much to the local and national economies. Failure to do so will result in long-term and possibly irreparable damage not only to wildlife but to the nation's tourism business and revenue as a whole.

1.3 Aims of the Study

The primary aim of this research aims to study how tour operators present economically motivated water-based activities to tourists and how good environmental practices during these activities, including the behavior of both tour operators and tourists, help to protect and prevent further degradation of the natural environment in Phuket province.

Secondly, this research aims to propose measures for implementing effective environmental practices at local, provincial and national level and give accurate and useful knowledge to the stakeholders and legislators in order to motivate them to develop and participate in more responsible and sustainably business practices. It is hoped that this understanding will

enable and promote sustainable ecological tourism to become the norm, thus protecting the attractive and valuable natural environmental resources and minimize the inevitable negative impacts that water-based tourism have brought to Phuket province.

1.4 Research Objectives

The major objectives of the study are,

- to study water-based activities in Phuket marine tourism,
- to examine the environmental knowledge and awareness of tourists and tour operators,
- to propose effective measures for protection of the natural environment and for minimizing of negative impacts on the natural environment.

1.5 Research Questions

- How have water-based tourism activities impacted the natural environment?
- What measures are needed to improve environmental awareness among stakeholders?
- How can stakeholders adapt their operations and behavior to ensure effective environmental management, which protects the natural environment resources and removes, reduces or minimizes negative impacts?

1.6 Significance of the Study

- This study can be used to identify and develop environmental management practices to preserve and sustain the natural environment and the economic activity dependent upon it.
- The study is expected to motivate tour operators (water bases activities) and stakeholders in general, to involve themselves more in adopting beneficial environmental practices to preserve and sustain the natural environment.

1.7 Scope of Study

1.7.1 Scope of time : Questionnaires and in-depth interviews conducted in October and November 2013.

1.7.2 Scope of area : This study is based in Phuket province but also includes various locations in adjacent provinces, which are used by stakeholders based in Phuket. This area is the most active location for water-based activities on the Andaman coast. Questionnaires collected data from tourists pursuing water-based activities and the in-depth interviews knowledge among the tour providers.

1.7.3 Scope of demography : This study limited to any water-based activities in Phuket marine tourism and the outlying islands. Both Thai and non-Thai stakeholders will be included in the survey.

1.8 Definition of Key term

Stakeholders

For the purposes of this study, "Stakeholders" are defined as "tour operators, tour guides and tourists who participate in/or provide water-based recreational activity in Phuket marine tourism. In addition this definition includes the local communities who benefit from or who are otherwise affected by water-based activity in Phuket marine tourism."

Water-Based Tourism

Water based experiences represented in Water-Based Tourism, Sport, Leisure and Recreation Experiences, Jennings (2007a), is defined as "Water-based tourism related to any touristic activity undertaken in or in relation to water resources, such as lakes, dams, canals, creeks, streams, rivers, canals, waterways, marine coastal zones, seas, ocean and ice-associated area".

Marine Tourism

Orams (1999) defined marine tourism as "the recreational activities that involve travel away from one's place of residence and which have as their host or focus the marine environment (where the marine environment is defined as those waters which are saline and tide-affected). The definition includes activities, which are not only 'hosted' by the sea (such as windsurfing or snorkeling) but also those, which have as their 'focus' the marine environment.

Consequently, activities such as shore-based fishing, land-based whale watching, reef-walking or watching professional surfing competitions are included, as long as they involve travel for the purpose of the activity and the focus of the activity is the marine environment or activities based on it". This study focuses on water-based activities only in and on the sea because the "tide-affected" element of Marine Tourism in the Phuket area is so small that it can be ignored.

The Natural Environment and the Developed Environment

Collin (1995) defines the environment as: "The environment is anything outside as organism in which the organism lives." While this is a quick and all encompassing definition, it does not highlight the full extent of what must be considered in defining as "environment" (Holder, 2000). A more comprehensive definition is offered by the Australian Government from the Environment Protection and Biodiversity Conservation Act (EPBC Act 2012):

- "(a) ecosystems and their constituent parts, including people and communities;
and
(b) natural and physical resources; and
(c) the qualities and characteristics of locations, places and areas; and
(d) Heritage values of places; and
(e) the social, economic and cultural aspects of a thing mentioned in paragraph (a), (b) or (c)"

For the purpose of this study, the definition offered by Swarbrooke (1999) is used in the following way:

The "Natural Environment" is here defined as a combination of what Swarbrooke call "The Natural Environment", The "Wildlife" and the "National Resources" constituent parts of a whole "Environment"; including "mountainous areas, seas, rivers and lakes, caves, beaches, natural woodland; land based mammals and reptiles, flora, birds, insects, fish and marine mammals; water, climate and air"

The "Development Environment" s made up of the two remaining constituent parts: the "farmed Environment" and the "Built Environment". For a detailed description of these constituent parts, please see, Figure 1: Scope of the concept of the environment in Appendix B.

Touristic Activity

UNWTO (2005) defines Touristic activities as any activity, that is, any pursuit, sport, hobby, endeavor, pastime, game, exercise or experience undertaken when a person is “outside his or her usual environment for a specified period of time and whose main purpose of travel is other than exercise of an activity remunerated from the place visited”.

Sport

The core elements of sport have been defined as the following:

- They must involve a symbolic test of physical or psycho-motor skills
- There must be a competitive framework, which requires: Specified, codified rules, which constitute the activity
- They must be continuity over time – a tradition of past practices (Haywood et al., 1995, p. 43 cited by Jennings, 2007a)

“The practices of physical education and sport is a fundamental right for all” (UNESCO 1982)

Leisure

Leisure defined as based on a duality of work, non-work time, particularly non-work time that is free from obligations (Goodale and Godbey, 1988; Neulinger, 1974; Seabrook, 1998).

Recreation & Recreational Experience

Recreation is “Any action that refreshes the mental attitude of an individual is recreation. Recreation is a wholesome activity that is engaged in for pleasure; therefore, it is play” (Douglas, 1982 cited by Jennings, 2007a).

The concept of recreational experience was presented as a linear episode involving planning, travel to, onsite, return travel, and recollection stages. There are, however, several definitions covering these each of these terms and these definitions can easily overlap or even change completely according to the perspective of the participant or non-participant

CHAPTER 2

LITERATURE REVIEW

The researcher was reviewed related literature concerning to the research objective. The relate literatures were identified as follows:

- 2.1 Water-Based Activities and Marine Tourism
- 2.2 Environmental Impacts of Tourism
- 2.3 Water-Based Activities Based in Phuket and Management of Water-Based Activities

2.1 Water-Based Activities and Marine Tourism

A) Water-Based Activities' group

Jennings (2007a) has categorized Water-Based Tourism, Sport, Leisure and Recreational Experience into 3 groups

1. Sailing and Boating
2. Sport or extreme sport
3. Adventure

1) Sailing & Boating

Number of private boat ownership worldwide has been increasing since the late twentieth century (Jenning, 2003). It should be noted, that this does not include the very many additional different types of boats used by commercial organizations and companies, which can also affect the natural environment.

In addition the support infrastructure required by all boat owners, operators and boating tourists, whether sail powered or otherwise, also affects both the natural and developed environments; this includes, but is not limited to, maintenance and repair facilities, docks, jetties, access roads, hotels, restaurants, airports, etc.

Phuket Island receives from 4 to 5 million tourists each year (Kasikorn Research Center, 2012), many of who pursue some forms of boat-based activity.

“As an experience and as a market, boating can be differentiated by the key energy source for propulsion, that is, whether it is sail driven (Sailing/Cruising) or motor driven

(Motorboating) (Jennings, 2007b, 2007c).

Within these differentiations the touristic activities addressed by this paper are “sporting, leisure and recreational” boating, whether on a sailboat or a motorboat or having used some type of craft in the pursuit of such activity. It must be noted here that these definitions can overlap definition boundaries, for example, a child on holiday with it’s parents for a race, whether on a sail or motor boat, can be described as a “sporting” activity; the child’s parent’s holiday, whom simply observe and relax on the shore, can be described as a leisure activity, and both are correct.

i) Sailing/Cruising

Sail driven boating, as quoted above by Jennings (2007b) includes sporting, leisure and recreational sailing, which may include “sail training camps; boat shows; regattas competitions; regional; state, national and international titles; and sailing events.” The types of sailboat used in these activities range from small dinghies through medium sized sailing yachts up to multi-mast “tall ships”. In addition many people go sailing purely for relaxation, with no sporting element to the experience at all.

With competitive sailing, additional “tourists” may be involved as spectators; support staff; other family members and friends.

Definitions of different sailing activities, relevant to this paper, include:

1. Sport Sailing: where the activity contains “individual or group recreational activities, usually physical, which involve interpersonal or intergroup competition, contests with nature (e.g. open ocean or round-the-world racing), or the more general exercise of physical skills” (Jary and Jary, 2000 cited by Jenning, 2007b).

2. Sailing as a Recreation and Leisure Experience: where the proponents seek recreational objectives, defined by Ryan (1979) cited by Jenning (2007b) as, “an opportunity for the “re-creation” of the positive aspects of the human psyche”. While other people may be seeking leisure as “defined by its opposition to, and indeed its sheer difference from, the world of work: it is the absence of work” (Seabrook, 1988 cited by Jenning, 2007b).

3. Sailing as Serious Leisure: This can be defined as the “systematic pursuit of amateur, hobbyist, or volunteer activity sufficiently substantial and interesting for the participant to find a career there in the acquisition and expression of a combination of its special

skills, knowledge and experience.” For example, a charter boat owner who makes a living from chartering his boat and also accompanies his visitors on long or short cruises for his own pleasure.

4. Sailing as a Touristic Experience: Tourism has been defined by World Tourism Organization (UNWTO)/ United Nations Recommendations on Tourism Statistics (2005) cited by Jennings (2007b) as the “activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes” Sailing and tourism can be linked. “Once sailing amateurs, hobbyists and volunteers move outside of their usual environments for periods of less than one year to engage in the chosen leisure experience of sailing, they simultaneously become tourist” (Jennings, 2007b). As a specific tourism experience sailing can be half-day, one day two-day or extended sailing adventures, cruises and expeditions. This includes crewing on yachts passing through the area; as well as chartering bareboat, skippered or crewed yachts and flotilla sailing (Richens, 1992 cited by Jennings, 2007b; Jennings, 2003).

5. Sailing as a Lifestyle: A life style is defined as “the manner in which an individual or group lives” (Jary & Jary, 2000 cited by Jennings, 2007b). Proponents of sailing as a lifestyle basically choose to make the boat their home, for extended periods of time: this automatically labels the proponents as “cruisers”.

Cruisers can be further sub-categorized into i) the “fly-cruise” segment, those who fly to their cruise location; ii) the “extended cruise” segment, those “who cruise for an extended period of time within a specific geographic area” Jennings (2007b): this includes cruisers who start and finish at the same port, as well as those whose cruise ends at a distant and different port; and iii) the circumnavigation segment, those who pursue global circumnavigation or some other navigation of a very large geographic area.

ii) Motor boating

Motor boating uses a motor as the key derived or only means of propulsion (Schemel, 2001 cited by Jennings, 2007c), which developed from early propulsion systems such as poling, paddling or rowing. Most water based activities for recreational leisure or tourism use motorboats for activities such as snorkeling, scuba diving and fishing. Later on during the mid-twentieth century in western nations, many more people have now adopted these leisure activities (Jennings 2007c). All activities from boating engage the marine environment and involve such

things as relaxing, sightseeing and experiencing the wilderness or communing with nature.

2) Sport or Extreme sport

i) Motorized Water Sports

The Queensland Government (1998, 2002) defined motorized water sport as conforming to one group of the following descriptions: (1) leisure, or those motivated by leisure, which includes sightseeing, looking, learning, unwinding, escaping, relaxing and experiencing peace and quiet; (2) active, or those motivated by activity interests, which includes fitness, skills improvement, using test equipment, challenge, conquering nature; (3) competitive, or those motivated by competition interests, which included motivational dimensions such as maximum distance, minimum time, fastest, most accurate, and most difficult. "This diversity and conflict has created emotive and polarized views on the use of motorized water sports" (Richins, 2007).

Richins (2007) created a definitive list of extreme water sport categories, including either wind or surf powered, and motorized activities. These include body boards, kite surfing, drag boats, skin boarding, surfing, wakeboarding, freestyle jet skiing, wake skating, waterskiing, hydrofoil, whitewater rafting, windsurfing, Powerboat racing.

Some organizations define motorized water sports that focus on the personal nature of the activity or the propulsion mechanism or speed of the craft and some have been classified as "soft" adventure rather than "hard" adventure (Richins, 2007).

People who pursue motorized water sports have a special interest in adventure and enjoyment and participate in outdoor water sports and activities. This can also bring economic benefit to local communities. A study about outdoor recreational activity in South East Queensland found that the respondents on motorized watercraft spent an average of four times the expenditure than non-motorized watercraft respondents, which equates to the second highest total yearly expenditure among recreational activity (Richins, 2007).

Motorized water sports have increased touristic activities and present both good opportunities for stakeholders as well as threats to the local community; motorized water sports create particular concern for whoever is committed to sustainable environment management practices. Some organization have attempted to control and minimize the impact from motorized water sports such as the Australian Marine Conservation Society, the Bluewater Network, the Noise Pollution Clearinghouse, etc. For more examples, please see table 1, in

Appendix A. Other organizations that support or promote various forms of motorized water sports such as the American Water Ski Association, the International Water Ski Federation, the International Council of Marine Industry Associations, etc. For more examples, please see table 2, in Appendix A.

ii) Surfing and windsurfing

Surfing predates windsurfing by several hundred years, the earliest records going back to the late 1700s by William Ellis and John Papa Li in Hawaii and the south Pacific Islands (Ryan, 2007). Although the sport enjoyed initial popularity in the early 1900s, there was a decline during the two World Wars and it was not until the 1950s that the sport became well known and adopted worldwide.

Windsurfing has become a widespread activity since the 1990s having suffered a decline in popularity in the 70s and 80s with fewer younger people becoming attracted to the sport, although the sport did not lose the active participation of the original windsurfing enthusiasts and developers. There has recently been a concerted drive to involve young people in the sport with support from organizations around the world that are spearheading various initiatives to develop participation rates” (Ryan, 2007).

iii) Sport Fishing and Big Game fishing

Fishing has long been a favored form of water-based recreation. As with many “survival” activities, fishing has become a popular sport motivated by the challenges of competition, both between participants and between participants and the natural environment. Big game fishing is considered a subset of the wider category of sport fishing (Killion, 2007), other forms of which may occur from smaller vessels; off rocky headlands; from beaches and in river locations. Despite an image of widespread popularity as a recreational activity, fishing does not figure prominently in the leisure preferences of a number of Western nations. Sport fishing in general and big game fishing in particular are species and, therefore, location specific, although seasonal fish movements make choice of destination more flexible.

iv) Scuba diving, Snorkeling and Free diving

Diving has become a global activity; Orams (1999) recommends that scuba diving and snorkeling become the most popular diving activities worldwide. Basic forms of diving, such as free diving and snorkeling, require minimum equipment, usually only a mask,

snorkel, fins and some weights. Free diving and snorkeling are different because free diving requires free divers to hold their breath for one or two minutes while descending, and snorkelers remain on or just below the surface, using only mask and snorkel. Snorkeling is easier accessible as a recreational activity because of the lower demands of equipment and training, which endorse that it has a wider appeal and higher participation rather than scuba diving (Garrod and Gossling, 2008). The World Organization (WTO) defines scuba-diving tourism as “persons travelling to destinations with the main purpose of their trip being to partake in scuba diving. The attraction of the destination is almost exclusively related to its dive quality rather than any other factor, such as the quality of accommodation or land-based attractions” (WTO, 2001). Scuba diving involves portable air supplies to remain underwater for longer periods of time and attain greater depths. ‘Scuba’ is an acronym (SCUBA), standing for ‘self-contained underwater breathing apparatus’, although the term is now so well known that it has been received into many languages as a simple noun (hence ‘scuba diving’, ‘scuba equipment’, and so on) (Garrod & Gossling, 2008).

3) Adventure

i) White Water Rafting

White water rafters seeking adventure enjoy “tempting fate” by running dangerous rapids, as well as surviving the uncertainty of life in the river wilderness. Whitewater rafting involves maneuvering a boat down a river through a number of rapids. Boats include rubber rafts and catarafts, wooden or metal dories and rubber pontoon boats. Kayaks, canoes and inflatable kayaks or “duckies” often accompany rafting trips. Rafts, catarafts and dories range between 12 to 18 feet in length and are typically paddle or oar powered. Pontoon boats range from 22 to 37 feet and tend to be motor powered.

Whitewater rafters are divided into two types of participants: river guides and their passengers (Jonas, 2007). River guiding involves only a fraction of a river guide’s time. They often spend considerably more time involved with more mundane duties, including boat operation during periods of flat water, reconnoitering suitable camp locations, food preparation, setting up and taking down sleeping and other facilities and a variety of other day-to-day activities

ii) Kayaking

A kayak is an almost entirely enclosed boat paddled from a sitting position with a double-bladed paddle. It involves paddling a highly maneuverable boat in many different types of water environments, for a variety of purposes by many differing types of recreationalists. Sea kayaking requires traversing a large body of open water interspersed with visits to interesting features such as islands, inlets, coves, bays, cliffs, beaches and other places to land the kayak and go exploring (Hudson & Beedie, 2007). This is often in locations with no other access except by water and where, therefore, there are no other visitors apart from the water-borne tourists. Morgan (1998) cited by Hudson & Beedie (2007) has classified Kayaking into four groups: fearless thrill seekers, daring thrill seekers, eco tourists and competence testers.

iii) One-Day Boating Adventures

A broad definition of one-day boating adventures includes both commercial one-day boating tours as well as recreational activities undertaken on one-day boat trips. The recreational activities category consists of many specific activities, such as fishing, sailing, diving and motor boating. To avoid repetition, therefore, this section will focus on the former category of one-day boat tours, run as commercial tour operations.

There are literally hundreds of one-day boating tours, for example; the Great Barrier Reef region of Australia has more than 400 permitted tour operations (Moscardo, 2007). Table 3 in Appendix A lists some of these tours, grouped into different types of tour programs (Coastal, Adventure, Wildlife Viewing, etc.), for example:

Coastal: with a coastal setting as a backdrop for relaxation and escape, tourists can enjoy many activities such as sailing, snorkeling around the beach, beach walks, beach barbeques;

Adventure: a kayaking program where tourists enjoy kayaking, walking in the mangrove forest, swimming and picnic lunch;

Access to a Special Place: in a program that presents indigenous/ethnic communities to the tourists where the tourists experience life in a “traditional” village, or, with the help of local guides, can “shoot the rapids” or go on bird-watching tours.

Wildlife viewing: such as whale watching programs, tourists watching whales, or other animals such as seals, and can visit abandoned settlements.

One-day tours can also be broadly divided into the following three categories:

1. A boat tour as a way to relax and escape, with the natural environment as a pleasant backdrop.
2. A boat tour that allows the participants to engage in a specific activity such as diving, fishing or interacting with marine wildlife.
3. A boat tour that provides access to special places such as coral reefs, historical sites or ethnic and indigenous communities.

Within this classification, three core themes can clearly be seen: (Moscardo, 2007)

1. Increasing diversity in the range of types of tours available, resulting in increasing competition between operators and reflecting a demand for more specialized experiences from participants.
2. Increasing integration of multiple activities into a single tour experience.
3. The use of new technologies to enhance visitor experiences and manage environmental impacts.

iv) Sail training

Sail Training constitutes a small part of water-based activities. It is mainly, but not exclusively, focused on the young who have their experience on “tall” ships: “A tall ship is any large sailing ship [which] includes schooners and other sailing ships rigged “fore and aft” (Easthope, 2007). Not all tall ships offer sail training; for example, some tall ships are rented out to film companies.

The majority of Sail Training involves some degree of personal development, whether provided for young trainees or older participants, such as the disabled (a specialist market) or commercial “team building” experiences. Because of the high costs of operating and maintaining tall ships they are few in number and usually operated and run by larger organizations or sponsorships, which have the resources necessary for successful and safe operation. There are also a significant number of people who learn about sailing in dinghies and other smaller, easier to manage craft, often on rivers and lakes as well as the marine environment.

B) Marine Tourism

As defined in Section 1.8 Definitions of Key Term, we can see that marine tourism is the recreational activity that is based in and on the marine environment: this study focuses on water-based activities in Phuket Marine tourism.

In 1979 Roger Clarks and George Stankey of the United States Forest Services proposed 'the Recreational Opportunity Spectrum model' ROS' that could be used to clarify the diverse range of recreational activities and settings that were available in forests and other large natural areas. This model becomes an extremely popular tool for describing and planning outdoor recreation (Manning, 1986 cited by Orams, 1999).

Orams (1999) represent the spectrum in the form of "the Spectrum of Marine Recreation Opportunities° SMRO". The spectrum, shown in Table 2-1, primarily categorizes marine recreational activity according to the distance from shore (ease of accessibility). This is the single factor that most strongly influences the activities undertaken. The table further shows relationships between the experiences available; the type of the environment in which these activities occur; the location (from activity locations near urban areas to definitions measured by distance (kms) offshore). At the end of the table are examples of touristic activities common in each Class. In one extreme of the spectrum, the near-shore environment (Class I), tourists are able to undertake a wide variety of shore-based activities which are easily accessible and which are in an environment commonly influenced by human-built structures.

At the other extreme (Class V) are those activities that occur far from shore, on the open ocean; these activities are usually characterized by isolation, closeness to nature and little contact with other recreationalists.

Table 2.1 The Spectrum of Marine Recreation Opportunities

Characteristics	Class I Easily accessible	Class II Accessible	Class III Less accessible	Class IV Semi-remote	Class V Remote
Experience	Much social interaction with others High degree of services and support Usually crowded	Often contact with others	Some contact with others	Peace and quiet, close to nature Safety-rescue available Occasional contact with others	Solitude Tranquility Closeness to nature Self-sufficiency
Environment	Many human influences and structures Lower quality natural environment	Human structures/influences visible and close by	Few human structures close by-some visible	Evidence of some human activity, e.g. lights on shore, mooring buoys	Isolated High-quality Few human structures / influences
Locations	Close to or in urban areas Beaches and intertidal area	Intertidal -----> 100 meters offshore	100 meters ----- > 1 km offshore	Isolated coasts 1-50 kms offshore	Uninhabited coastal areas > 50 kms offshore
Examples of activities	Sunbathing People watching Swimming Playing games Eating Ski boarding Sightseeing	Swimming Snorkeling Fishing Jet-skiing Non-powered boating Surfing Para-sailing Windsurfing	Usually boat-based Sailing Fishing Snorkel/Scuba diving	Some scuba diving Submarining Powerboat (offshore equipped) Sailing - larger sailboats	Offshore sailing Live-aboard offshore fishing/Scuba diving Remote coast sea-kayak

←

Intensity of use

←

Human impact

Source: Orams (2000)

Orams' table also highlights the fact that the intensity of use of these activities in the five Classes of accessibility runs parallel with the human impacts on that environment: i.e. the more remote the location of use, the less is the human impact (arrow diagram following the Table 2-1).

Where a particular marine tourism activity lies within the SMRO, clarifies its environmental characteristics, the experiences available and intimates the degree of human impact in these areas.

2.2 Environmental Impacts of Tourism

A) Impacts

According to Mayur (1996) cited by Fennell (2001) there is an imbalance in viewing the environmental impacts of tourism, whether water-based or otherwise, which has given more emphasis to the symptoms of the impacts, instead of their underlying causes. Two reasons are offered for this, one, that our human disposition tends to be uncertain or suspicious and therefore, despite our intelligence, we fail to understand "the origins, significance and interrelationships" (dependencies) of many parts of the whole tourism dilemma (being the destruction of the very things the tourists have come to see, for the sake of tourism and profit alone: "we love it, but then destroy it") and therefore fail to find effective solutions to complex problems: we may be too focused on "single items" or impacts. Tourism

The second reason offered is that there is a lack of "sound models and data" impacts are often identified but not controlled" (Dowling, 1993; McKercher, 1993 cited by Fennell, 2001).

There have been advances in these two vital areas, with the development of tourism impact scales such as those developed by Ap and Compton (1998) and before them, Lankford (1994).

The perception of certain impacts determines whether they are acceptable or "not acceptable in terms of appropriate and responsible tourism development" (Fennell, 2001).

Although beyond the scope of this study, in view of the above, some mention must be made of the complexity of the problems when considering marine tourism and tourism in general. For example, when considering a new diving resort, consideration must be given to the

requirements specific to the diving operations, but also, and in many ways more importantly, developers should also consider the impacts or the support infrastructure, for example:

Provision of hotels, restaurants, laundries, sewage, airports, roads, electricity, policing, medical and rescue facilities, banks, housing for local workers; legal issues concerning insurance, compensation and the processing thereof; provision for national and local government administration, increased strain on local resources e.g. water & electricity); etc.

As is very obvious, it is a long list. In addition, some of these issues are best addressed using international norms in law and operating standards, in particular, safety: a particularly important issue with adventure and “dangerous” sports. Some issues will be best addressed by National government bodies, some by local government and some by the local people themselves.

B) Positive and Negative Impacts

The impacts of tourism upon the environment can be categorized into two groups of negative and positive impacts (Holden, 2000). The negative environmental aspect cast by the impact depends on how much observation and commentary has been developed which raises awareness of the negative impacts that can result from tourist development; whilst the positive environmental aspects are often less well defined. This unbalance shows that human activities are likely to be harmful, involving, at the minimum, damage to individual flora and fauna and sometimes a threat to the existence of species and whole ecosystems.

1) Negative Impacts

The negative physical and cultural environmental impacts resulting from tourism and tourism development can be categorized into three major types of concern: resource usage; behavioral considerations and pollution (Holden, 2000).

i) Resource Usage

The development of tourism requires physical resources to facilities its expansion. The building of tourism infrastructure, such as airports, hotels and tourist attractions, requires land. This often leads to competition for land use with other economic activities, such as agriculture, or in more extreme cases, extractive logging and mining.

Another key natural resource is “water”. Everybody needs water for drinking, cooking, showering and washing, etc. Tourism development and the consequent increased

population levels, causes increased water use that can lead to conflict among local stakeholders; damage to ecosystems and other very serious consequences.

ii) Behavioural Considerations

The viewing of wildlife species in their natural habitats has become a popular activity for an increasing number of tourists. The resulting intrusion of humans into environments which had previously been the exclusive preserve of wildlife and can even destroy entirely the natural attraction (the "tourism dilemma"). Human intrusion will bring disruption to the natural behavior of the wildlife they want to see. For example, safari tourism practiced in the Serengeti Park on the Kenyan/Tanzanian border is representative of a highly developed level of tourism: local tour operators take tourists into the park in minibuses and the animals can be surrounded by thirty or forty vehicles full of tourists taking photographs. The invasion of the territorial space of the animals and the associated increase in noise levels raises the stress levels of animals, which is disruptive to their breeding and eating patterns (Holden, 2000).

Beside wildlife, other natural resources can also be threatened by the behaviour of local people. For example, local people break off pieces of coral to make souvenirs and sell to tourists; local tour operators take tourists out in boats to visit reefs and sometimes don't use the installed anchor-buoys, but drag their anchors through the coral; tourists harm the coral by touching and standing on it. Careless tourist behavior can also adversely affect wildlife and ecosystems; for example, elephants have been killed by eating electric batteries thrown onto rubbish heaps surrounding the outskirts of lodges in the Maasai Mara in Kenya (Holden, 2000).

The behavior of tourists can also cause cultural changes in the societies they visit, especially in less developed countries where there is likely to be a difference between the lifestyle of the tourists and that of the local population. The copying of tourists' fashions can lead to cultural conflicts between different groups in communities as well: Muslim girls who live on the Mombassa coast in Kenya see western women dressed in bikinis and some of the local girls wish to dress the same way, causing conflicts with their religious tenets and disrupting family harmony.

iii) Pollution

Pollution of the physical environment resulting from tourism occurs on different levels. Tourism generates waste in the destination area and also other localities not

directly connected with tourism. It is important to point out that tourism, together with other industries which may or may not be directly connected with tourism, are significant contributing factors to local and global pollution.

The pollution associated with tourism maybe categorized into four main types: water, air, noise and aesthetic pollution.

- Water Pollution

Water pollution is a major problem in many tourist regions of the world. In the most visited tourist destinations in the world, the Mediterranean and Caribbean Basin, sewage is treated (cleaned) before discharge into the sea. This behaviour is good when compared to other areas of the world, such as Asia, Africa and the islands of the South Pacific, where there is no sewage treatment and no treatment facilities. The problem of water contamination from human sewage is not totally caused by the tourists, but is reflective of the wider problem of insufficient infrastructure to meet the needs of local people and tourists: solutions for which are beyond the ability of local people to fix and which require action at government or even international government level.

Water pollution can affect human health, causing diseases ranging from mild stomach upsets to death. Human sewage also causes eutrophication (nutrient enrichment) of water, which can pose a particular threat to coral and associated ecosystems. Eutrophication of water can bring an effective downturn in tourism demand. For example in 1998 the number of tourist booking on the Romagna coast of Italy fell by 25% compared to 1988 (Becheri, 1991 cited by Holden, 2000) because of eutrophication of the Adriatic and the spread of algae on the surface of the water.

Moreover, fertilizers, herbicides and other chemicals and materials also cause water pollution. Fertilizers and herbicides are particularly widely used on golf courses and hotel gardens. Other sources of water pollution (among a very long list) can be caused by motorized leisure activities such as power boating. Even suntan oil washed off tourists when swimming can result in localized pollution. Major sources of water pollution and those doing severe damage over large areas, come from oil spills, industrial waste pumped into sea and from chemicals used in agriculture.

- Air Pollution

A major source of air pollution from tourism is associated with transport used to provide and facilitate tourism activities. Both air and car transport contributes to local and global atmospheric pollution through the burning of fossil fuels. The release of carbon dioxide (CO₂) is widely believed to be a major cause of global warming. The emission of sulphur dioxide (SO₂) contributes to problems of acid rain, which destroys forests and historic monuments.

Air pollution is also related to the development of airports for tourism. Health issues include breathing problems caused by exhaust emissions from aircraft, cars, busses and other vehicles, as well as stress to humans associated with noise pollution from air traffic. There are, however, larger air polluting activities than tourism, such as the use of motorcars in everyday life and the burning of fossil fuels to produce electricity.

- Noise Pollution

Noise pollution from tourism is most noticeable in destinations where tourists are searching for quietness and peace. Noise pollution from the construction of tourism facilities can also be a problem for residents and tourists. For people who live around busy international and domestic airports also have problem with noise pollution, which may sometime lead to violent opposition by local people and protest groups. In areas that have night clubs, bars and restaurants open late as well as increasing motorized traffic from tourism movement, all add to noise pollution by both residents and tourists in tourism destinations.

- Aesthetic Pollution

The development of tourism facilities can also lead to a decline in the aesthetic quality of the environment. Tourism development is often too focused upon maximizing profits and ignores aesthetic concerns. In mountain areas tourism also creates “unpleasant” development which can cause local strife and conflict, sometimes violent. For example, hotel and apartment construction and the development of ski lifts and pistes in skiing resorts, have also been heavily criticized as a form of aesthetic pollution.

All negative impacts, Holden (2000) are summarized in Table 4 in Appendix A. This table clearly highlights the issues and problems of negative physical and cultural impacts and provides some real-life examples of negative impacts, ranging from draining of wetlands and the consequent disruption to the natural living processes of wildlife, to increased incidence of

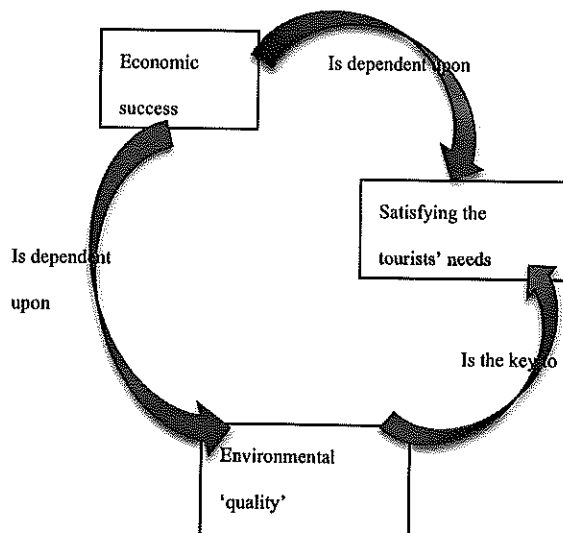
drugs and prostitution in the local human population resulting from increased tourist development.

From above, it can be seen that tourism can have negative impacts upon the environment. Major issues of concern are resource usage, pollution and aspects of tourist behavior toward the environment they are visiting. These negative impacts include both physical and cultural aspects. These negative impacts, however, must be offset against the economic benefits offered through tourism.

2) Positive Impacts

Tourism is being used as a way of protecting the environment from possibly more damaging forms of economic activity, like logging and mining. The development of tourism normally increases emphasis on the maintenance of a 'good-quality' environment in a tourist destination. The long-term economic success of tourism is often dependent upon maintaining a level of quality in the natural environment, which will satisfy the requirements of tourists and at the same time preserve and protect that environment.

Figure 2.1 Relationship dependencies between the natural environment, the local economy and tourism



Source: Holden (2000)

Figure 2.1 shows the dependencies between the economic success of tourism, the environment and the tourist's needs: an environment that includes both cultural and physical resources is the key to satisfying the needs of tourists and building sustainable, long-term economic benefit from tourism. Therefore, it is in the interest of the destination community to ensure that the natural environment remains well preserved and that they provide stewardship of that environment, while at the same time limiting the impact of increased tourism support development in the urban or "settled" areas. It is imperative the areas of most attraction to the tourists are actively protected and preserved: the consequences of not providing good stewardship is to lose the tourist businesses altogether.

An example of tourism making a positive contribution to environmental improvement is in depressed, or "post-industrial", urban areas. For example, tourism can bring problems of traffic management, overcrowding and other associated problems. There is, however, little doubt that environmental improvements have indeed resulted from the development of tourism in depressed urban areas. One advantage of improving the environmental quality of the urban environment, especially where it is combined with improved infrastructure development. This enhances the images of the area and makes it more probable that other businesses and services will be attracted to relocate and make investments in the improved areas.

C) Environmental Impacts of Water-Based Activities

Jenning (2007d) identified the environmental impact of water-based activities and categorized these as negative or positive impacts in nature. Water-based recreation can cause a wide variety of impacts, both positive and negative, to the environment (Arthington et al., 1989). An example of negative impacts can be seen from motor boats damaging aquatic plants through direct propeller damage, wash, increased turbidity, and exhaust and petroleum residues from outboard motors. Larger recreational boats may cause impacts from antifouling agents, which may contain damaging chemicals or materials and from discharge of sewage. Moreover, water pollution by nutrients and microorganisms also occurs from the discharge of human waste from boat toilets, waterside accommodation buildings, campsites, etc. (Buckley, 2001). Examples of both positive and negative water-based impacts are shown in Table 5, Appendix A: Overview of Various Environmental Impacts of Water-Based Experiences. Accordingly, common positive

impacts involve educative practices and development strategies to support sustainable practices. Potential negative impacts include the creation of an imbalance in ecosystems; demonstrative physical effects to biodiversity and specific species; changes to water quality, as well as various other forms of pollution.

Many water-based activities need motorize craft for activities, which Richins (2007) identified four categories of impacts below:

1. Direct Physical Stresses on Aquatic Organisms: damage by propellers; contact with hull parts; propeller or jet generated turbulence and shear forces; hull generated rotation forces; animal disturbance and noise pollution.

2. Biological effect of pollutants: thermal loading (undesirable heating of a water mass); increased turbidity (“clouding” of water due to suspended particles); disruption of the [natural] stratification of water.

3. Negative impacts on the physical environment: hydrocarbon increase; boat engine emissions; leaching of toxics; spills during fuelling operations; erosion of riverbanks; the carrying capacity of environmental effects.

4. Impacts on the human leisure experience: noise disturbance; crowding; fumes; safety; conflict of fast versus slow moving watercraft; conflicts with other leisure interests.

As Chattamart (1998) cited by Sethapun (2000), about the environmental impacts from kayaking, “Several coastal and marine national parks in Thailand were established in order to protect important mangrove habitats which have been declining at an alarming rate throughout Thailand’s coastal zone. By one account, this habitat still significantly underrepresented”. Gray (1999) cited by Hudson & Beedie (2007) state that Phang Nga Bay, one of the Marine National Parks that has big mangrove forest, is adversely affected by kayaking activity. Phang Nga bay is a very famous and therefore popular location and tourists come from all over the world to visit the impressive and awe-inspiring limestone sea caves. The caves became so popular that sometimes more than 1,000 kayakers visited each day, an unsustainable number which inevitably had a detrimental effect on this valuable resource: boats jammed the narrow passages, tourists snapped off stalactites for souvenirs and scared away gibbons, hornbills and other wildlife. In addition, there were adverse impacts from Scuba diver who also find the caves attractive but behave with sometimes scant concern for preserving what they have travelled so far to enjoy.

The World Tourism Organization (2001) suggests that scuba divers take regular annual overseas holidays, often with the aim of diving world-class sites. At such dives sites, the water is most often warm and the underwater visibility good; the underwater landscapes are breathtaking and the seas teem with marine wildlife. Coral reefs are a major attraction for marine tourism in many forms with Scuba diving and snorkeling as well as other water-based activities. Providing aesthetic beauty and a good habitat for a vast array of marine species, coral reefs are a highly valuable ecosystem and provide additional benefits such as coastal protection, provision of genetic resources, and even new pharmaceuticals. Unfortunately, coral reefs around the world now face considerable threats from human activities (Asafu-Adjaye and Tapsuwan, 2008).

Over 50 percent of all coral reefs in Thailand are included in existing Marine National Parks. According to many studies, notably by Phuket Marine Biological Research Center, The national park coral reefs are in better condition than those in other areas, although they are not as healthy as they were 10-15 years ago. National parks such as, the Surin Islands, the Similan Islands, Lanta Island and Chang Island have some of the finest coral reefs in the country in term of size, species diversity and condition: these sites are of international significance (Sethapun, 2000). Phuket Marine Biological Center sadly note that Thailand's coral reefs are 50% gone. Abundant and beautiful coral reefs are now only found in national parks, such as the Surin Islands and the Similan Islands reserves. In these places the coral is thankfully still world class (Khamlo, 2012).

2.3 Water-Based Activities Based in Phuket and Management of Water-Based Activities

A) Water-Based Activities Based in Phuket

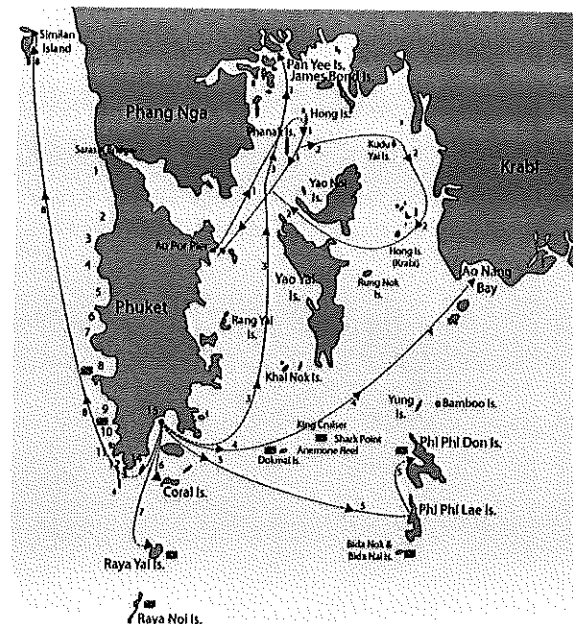
Phuket is an island province, with easy access to water-based, leisure, and recreation activities for tourists who come to visit the island in increasing numbers every year (Thailand Tourism Investment Promotion Division, 2012). Water-based activities in Phuket are covering a wide variety of activities. Table 2-2 shows examples of water-based activities in Phuket. Phuket has an international airport which makes it easy for tourists to fly direct to Phuket Island and from Phuket there is easy access to the attractive destinations both on Phuket Island as well as the surrounding islands; access is by speedboat, live-aboard, ferry, etc. This ease of access helps to ensure Phuket Island as a central base from which many water-based activities are accessed by

the increasing number of tourists. From the map in figure 2-2 you can see that touristic areas included in this study consist of Phuket Island itself as well as the many surrounding islands and includes famous island destinations in other nearby provinces, such as James Bond Island and Phi Phi Island, are in Krabi, Similan Island in Phang Nga. It can be seen that tour operators are based in Phuket Province but whose operations extend to other provinces. This could lead to problems with regulating the tourism business as different provinces may implement different standards for sustainable tourism. This emphasizes the need for national standards as opposed to locally implemented procedures, with TAT being the only nationwide organization and which is best placed to enforce and regulate national standards for tour operations.

An example of tours departing from Phuket Island but the actual destination is in a different province are shown below:


- Snorkeling/diving in Phi Phi Islands, Krabi Province
- Canoe/Kayak/Day trip cruise in Phang Nga bay, Phang Nga Province
- Diving liveaboard in the Similan Island, Phang Nga Province

Figure 2.2 Map of Phuket with example of itinerary routes and dive sites around Phuket Island



Source : <http://www.scubadivingphuket.net/scubadivingphuket/2010/03/22/free-similans-map-similan-islands-map-phuket-dive-sites-map-thailand-dive-sites-map-and-free-map-of-thailand/>

Location Key:

1 = Mai Khao Beach	2 = Nai Yang Beach
3 = Naithon Beach	4 = Layan Beach
5 = Bang Tao Beach	6 = Surin Beach
7 = Kamala Beach	8 = Patong Beach
9 = Karon Beach	10 = Kata Beach
11 = Kata Noi Beach	12 = Naihan Beach
13 = Prom Thep Cape	14 = Rawai Beach
15 = Ao Chalong Pier	 = Dive site

Kayak route

- 1 = Kayak day trip from Ao Por Pier to Panak Island and come back
- 2 = Kayak at least 2 days go around Panak Island, Hong Island in Krabi and come back to Ao Por Pier

Speedboat route example

- 3 = Ao Chalong to Koh Pan Yee and James Bond Island
- 4 = Ao Chalong to Ao Nang
- 5 = Ao Chalong to Phi Phi Island
- 6 = Ao Chalong to Coral Island
- 7 = Ao Chalong to Racha Yai
- 8 = Liveaboard diving depart from Ao Chalong to the Similan Island.

For a summary of activities in Phuket, please see Table 2.2: Water-based activities in Phuket, Thailand and Table 2.3: Water-based activities available at different locations in Phuket. Shown below are examples of the activities available at different locations in the area of this study:

Table 2.2 Water-based activities in Phuket, Thailand

Water-based Activity Type	Activity
Sailing/Cruising	Sailing
	Regatta
Motorboating	Snorkeling- Scuba diving- Fishing by speedboat, big boat or liveaboard
	Sunset dinner cruise
Motorized Water Sports	Kite surfing
	Jet-Skiing
Surfing and windsurfing	Surfing
	Wind surfing
	Parasailing
Sport Fishing and Big Game fishing	Fishing daytrip
Scuba diving, Snorkeling and Free diving	Speedboat - day trip diving, snorkeling
	Big boat - day trip diving, snorkeling
	Live aboard diving
	Underwater Scooter
Kayaking	Kayaking
One-Day Boating Adventures	Fishing-Sailing- Diving

Table 2.3 Water-based activities available at different locations in Phuket

Area	Activities
Kata Beach	Scuba diving
	Jet skiing
	Surfing
	Kite Surfing
Kata Noi	Kayaking
	Surfing

Table 2.3 Continued

Area	Activities
Patong Beach	Jet Skiing
	Banaboat
	Surfing
	Snorkeling
	Scuba Diving
Nai Thon Beach	Kite Surfing
Nai Han Beach	Kayaking
	Surfing
	Scuba diving
	Snorkeling
Rawai Beach	Long tail boats take tourist to islands around
	Fishing
Kamala Beach	Surfing
Kalim Beach	Surfing
Khai Island	Snorkeling
Tapao Noi Island and Tapao Yai Island	Fishing
	Canoeing/Kayaking
Bon Island	Snorkeling
	Canoeing/Kayaking
MaiThon Island	Snorkeling
	Fishing
	Canoeing/Kayak
Maphrao Island	Boat tour-Wildlife viewing from boat-Monkey, birds
	Join native fishery
Racha Yai Island and Racha Noi Island	Scuba Diving
	Snorkeling
	Fishing
Rang Yai Island and Rang Noi Island	Snorkeling
	Canoeing/Kayaking

Table 2.3 Continued

Area	Activities
Lane Island	Canoeing/Kayaking
	Snorkeling
	Boat tour ^o Wildlife viewing ^o Hornbill watching
	Boat tour ^o visit traditional fishery
Hae Island or Coral Island	Jetskiing
	Snorkeling
	Banana boats
	Parasailing

Because marine recreation occurs in close proximity to urban areas or areas developed primarily for human use, the touristic natural environments adjacent to these areas are subject to increased pressure. Marine environments closer to cities receive large amounts of urban “run-off” and other discharges from human activities such as sewage, storm-water, etc. Moreover these environments are often subject to dredging, foreshore alteration and reclamation, and dumping of waste products to the sea and more frequently commercially fished and have a large number of vessels and navigation aids. The effects of higher level of use in these areas are more vulnerable to additional pressure produced by recreational activities (Orams, 1999).

B) Management of Water-Based Activities

The number of tourists who participate in water-based activities, leisure, sport and recreation is growing rapidly and these activities are causing many problems. As previously noted, however, not all impacts from water-based activities are harmful. In some cases there have been positive impacts, which are beneficial. Sometimes positive impacts outweigh negative impacts because tourist businesses are small in that area compared to the larger, more developed locations. The benefits to the local community and tour operators depend on an informed operating perspective by stakeholders. The most important of which is minimizing negative impacts and maximizing positive impacts. Suggestions for measuring the impacts of tourism and a conceptual model for management is here offered.

1) Strategies Used to Manage Marine Tourism

Orams (1995) divided tourist management strategies into four main categories: Physical, Regulatory, Economic and Educational. In the past, physical and regulatory strategies used to control stakeholder behavior through external manipulation have dominated. Economic strategies have been utilized and educational strategies have traditionally been incorporated in park management activities (Beckmann, 1989 cited by Orams, 1999). Table 6, Appendix A: Techniques for Managing Marine Tourism, details examples of specific management actions. Specific examples from each category are:

Physical: Site hardening to increase the durability of the resource by using boardwalks, concrete launching ramps and mooring buoys. This reduces negative environmental impacts resulting from intensive use. The implication here is site hardening will escalate the development of the site.

Regulatory: Prohibit certain activities deemed harmful, unsafe or detrimental to others, such as banning motorized craft within 100m of the shore. This is intended to reduce harm and conflict among stakeholders. The implication here is some people may resent these prohibitions, requiring enforcement operations to police them.

Economic: Imposing fines for inappropriate or damaging behaviour: such as littering or vandalism with the purpose being to penalize bad behaviour and reduce its occurrence. The implication here is that it will require both legislation and enforcement.

Educational: Guided tours provide an opportunity for formal, educative communication between tour guides and the tourist individuals to encourage appropriate behaviour and to reduce visitor impacts or conflicts. The implication here is that the education and motivation levels of the guide must be high enough to achieve these objectives.

To minimize the negative impacts on natural environments, effective environment management is critical, whether through regulation; thoughtful planning and design; improved equipment and operating procedures; training and education of guides and clients, or a combination all of these together. To reduce the impacts of tourism, there are some associations and organizations that have produced a range of environmental guidelines, minimal-impact training materials, and best-practices handbooks. In the USA in particular, minimal-impact guidelines produce by the non-profit "Leave-No-Trace Inc." (LNT), have been adopted, endorsed

and widely distributed by land and management agencies. In Thailand the TAT (Tourism Authority of Thailand) have guided land use and defines standards for each activity to minimize the negative impacts to the precious natural environments abundant in the coastal waters of the country.

Tour operators have a significant role in the tourism industry, given their role as intermediaries who design, organize, package, market and operate vacation and other tours (Morrison, 1996 cited by Higgins, 2001). Tour guides often have the freedom and, more importantly, the opportunity to practice the principle of environmental raising environmental awareness directly with the tourists. Guides may be employed on a permanent, casual or freelancing basis. From the operator's perspective, for example, a guide's duties often include:

- ensuring the safety, health and comfort of clients;
- providing courteous and quality customer service;
- responding to the needs and expectations of visitors from other cultures and those with special needs due to age, a disability or special interests;
- managing interactions within client groups;
- delivering the tour cost-effectively, both for the tour operator and the tourist;
- providing high quality, informative and entertaining commentary;
- meeting regulatory mandates, the moral obligations and expectations of the protected area managers, host communities and clients (Higgins, 2001).

In some small tour operators, the guide is also the owner/operator. In some companies, organization in remote areas or in other countries in which they are not based, often never actually observe the tour guide's performance on the job and rely solely on the guide's own assessment of the tour and only infrequently to feedback directly from their clients, the tourists. Many operators have little or no idea of what a stakeholder's understanding and appreciation actually is, of nature, the natural environment and of their guided tour experience as a whole (Higgins, 2001).

2) Regulatory and other support organization in Thailand

The Department of Fisheries (DOF) is responsible for development and enforcement of fishing laws, regulations, training, extension and research. DOF maintain offices at provincial and district levels. Because of the lack of staff (Sethapun, 2000) the DOF does not have capacity to effectively perform its duties within the marine national parks.

The Tourism Authority of Thailand (TAT) plays an increasingly stronger role in nature conservation and awareness-raising among tourists regarding nature protection. TAT also plays a significant role in being the only official agency responsible for the education of tourist guides. However, the agency's direct experience in marine protected area management is still limited (Sethapun, 2000).

The Office of Environmental Planning and Policy (OEPP) under the Ministry of Science, Technology and Energy (MOSTE) has direct responsibility for issues related to the development of policy and planning to sustainably develop natural resources and environment (Sethapun, 2000).

The Natural Resources and Biodiversity Institute (NAREBI) is playing a leading role in, for example, coastal policy development, co-ordination of natural resources policies, including co-ordination of community based organizations such as the Tambon Administration Organization (TAO), community organizations and public institutions (Sethapun, 2000).

Local and international operators and private enterprises involve in transporting tourist have indicated genuine interest in helping the Marine National Park Division (MNP) to protect the natural habitats of the park. These operators also have financial means to play important roles in nature protection. MNP has not been sufficiently capable of mobilizing private enterprises for nature protection and tourism awareness campaigns (Sethapun, 2000).

Some Examples of Private Enterprises and Their Activities.

Green Fins: Green Fins is comprehensive program that encourages dive centres and snorkel operators to work together to reduce their environmental impacts on coral reefs by adopting the Green Fin Code of Conduct. The code of conduct consists of 15 points (See Figure3 in Appendix B), which target environmental threats posed by diving and snorkeling. A Green Fins member will receive training and tools to promote environmental education and awareness.

The Green Fins projects is initiated and coordinated by the United Nations Environment Program. The Coordinating Body on the Seas of East Asia (COBSEA)'s secretariat is part of the effort to increase public awareness and management practices that will benefit the conservation of coral and reduce unsustainable tourism practices. Countries that have implemented the Green Fins system are Indonesia, Malaysia, Philippines and Thailand.

Project AWARE (Aquatic World Awareness Responsibility and Education) foundation, formed from the PADI (Professional Association of Diving Instructors) is the scuba diving non-profit environmental organization dedicated to conserving the aquatic environment through education, advocacy and action. In Phuket there is the "Go Eco Phuket" group, whom are supporters and advocates of the Project AWARE Foundation. Go Eco Phuket is a group of eco-scuba diving shops and businesses located in Phuket. Another project of "Go Eco Phuket" is "Dive Against Debris", this project is coordinated by diving operators and volunteer divers who visit islands around Phuket to clean up dive sites, as well as beach cleanup activities.

Local Communities. In the past the relationship between local communities and some marine National Parks has been one of conflict, particularly over land-use and ownership. This has prevented effective development of good practices and the conflict element of the disagreements has kept away various enthusiastic NGOs (Non-Government Organization) who might otherwise provide effective development (Sethapun, 2000).

The situation concerning the successful development of the marine National Parks is in dire need of national, provincial and local level mechanisms and institutional arrangements which can assist stakeholders to effect good cross-sectional cooperation. Participation and cooperation has been poor because of this. Monthly meetings organized at the provincial level are the only current mechanism attempting to achieve this vital objective.

CHAPTER 3

METHODOLOGY

This chapter describes the methods the researcher used to collect, analyze and present the data, defined as follows:

- 3.1 Populations and Sample Size
- 3.2 Data Collection
- 3.3 Instruments
- 3.4 Statistical Methods
- 3.5 Research Design and Implementation
- 3.6 Data Analysis

3.1 Population and Sample size

3.1.1 Population

The target population in this questionnaire focused on both Thai tourists and tourists of other nationalities of all ages, who had used water-based activity in Phuket marine tourism. There exists a difficulty in being specific about the exact number of tourists who have used marine water-based activity in Phuket. This research considered the number of tourists who arrived in Phuket in 2014.

The interviews were conducted with tour operators.

Tour Operators: a representative number of tour operators in Phuket were included in the interviews. It is very difficult to establish the exact number of tour operators who have businesses only in water-based activity for marine tourism. This is because some of them provide other forms of touristic activities in addition to water-based activity and marine tourism.

Table 3.1 Classifications of Group of Population

No.	Group of Populations	Descriptions
1	Tour Operators	Tour operators who provide water-based activity for marine tourism and have office based in Phuket
2	Tourists	Domestic and International tourist who visited Phuket

Source: Population of the tourists arrived Phuket in 2014 from Department of Tourism, Thailand.

3.1.2 Sample Size and

The sample was calculated from both international and Thai tourists who have used marine water-based activity in Phuket. The numbers of tour operators offering water-based activities in Phuket is indeterminate, as mentioned above. Therefore the researcher had in-depth interviews with 16 tour operators. There were selected because they were registered with the Ministry of Tourism or, in the case of jet skiing, were registered with the relevant Phuket province authorities.

According to statistics compiled by Department of Tourism, Thailand from January-December 2014, the total number of tourists who visited Phuket was 10,793,303 of which 2,975,032 were Thai tourists and 7,818,271 were other nationalities. Using the formula of Yamane (1973) to find the number of samples required for the questionnaire was as follows:

$$n = \frac{N}{1+N(e)^2}$$

Where n = sample size

N = The number of population (In this case, the population is tourists who stayed in Phuket for at least one night)

e = significant level (in this case, the researcher use 5% for significant level)

$$n = \frac{10,793,303}{1+(10,793,303)(0.05)^2}$$

$$n = 399.98$$

The number of samples required was therefore 400. The researcher distributed questionnaires for both Thai and International tourists who had used marine water-based activity in Phuket. The accidental random sampling method was used.

3.2 Data Collection

Sources of Data: This thesis collected both primary and secondary data.

3.2.1 Primary Data Collection : Primary data were collected by both quantitative and qualitative research as follows:

3.2.1.1 Quantitative Research : Questionnaires were distributed to 410 tourists in Phuket who had used marine water-based activities in Phuket province, such as snorkeling, scuba diving, kayaking, game fishing, etc. The researcher collected the data during the period of October 2013 to December 2013. This effectively included data from the “high” season, which is usually from November to April.

3.2.1.2 Qualitative Research: in-depth interviews were conducted with 16 marine, water-based, tour operators. The questions for the in-depth interview were designed according to the environmental awareness and environmental practices of the selected tour operators. The interview schedule was based upon the interviewee’s availability and convenience.

3.2.2 Secondary Data : The researcher collected information that related to marine, water-based activity and its impacts on the environment, either in Thailand or abroad. Sources of secondary data were the internet, textbooks, analytical papers, magazines, journals, and various media from the Tourism Authority of Thailand, Phuket.

3.3 Instruments

The questionnaire and interview questions from this study were developed from several previous studies; Spenceley (2007), Frefericks, Garstea and Monforte (2008), Kc (2013) and Eng-Chuan (2007)

3.3.1 Questionnaire. Both multiple choice and open-ended questions were used for tourists who had participated in any marine, water-based activity provided by Phuket-based tour operators.

3.3.2 In-depth interviews were conducted with 16 tour operators that had their touristic operations based in Phuket Province and the area defined by this study.

3.4 Statistics use in this research

Descriptive statistics were used in this research to describe features of the data, such as frequency, mean, Standard Deviation, etc.

3.5 Research Design and Implementation

3.5.1 The Questionnaire was divided into three parts and defined by:

- The respondent's water-based activities experience, with an emphasis on environmental awareness.
- The respondent's opinion regarding water-based activities in Phuket and the surrounding area, with an emphasis on environmental awareness.
- The respondent's demographic profile.

The structure of the questionnaire is a combination of choice, dichotomous scale, Likert's scale and open-ended questions.

3.5.2 The Interview Method focused on the questions that related to:

- The existing and future development of water-based tourism activities.
- The environmental knowledge and awareness of stakeholders.
- How stakeholders protected and minimized negative impacts on the environment as a whole.

3.6 Data analysis

3.6.1 Questionnaires: The data in this study was analyzed using the SPSS program (Statistical Package for Social Sciences) method to analyze collected data by using Frequency and Mean. Mean is based on the interval level that was calculated as follows:

$$\begin{aligned} \text{The interval width} &= \frac{(\text{Maximum} - \text{Minimum})}{n} \\ &= \frac{(5 - 1)}{5} \\ &= 0.08 \end{aligned}$$

Therefore, the researcher arranged the level of importance as follows:

Mean	Level of Importance
4.21 – 5.00	Very High
3.41 – 4.20	High
2.61 – 3.40	Medium
1.81 – 2.60	Low
1.00 – 1.80	Very Low

3.6.2 Content Analysis based on the in-depth interviews and the open-ended questions was used to analyze the interview data.

CHAPTER 4

RESULT

This study used a mixed method: both quantitative (see below 4.1) and qualitative (see below 4.2 Qualitative Results).

4.1. Quantitative Results for questionnaire with 410 tourists (as defined in 3.2.1.1)

Quantitative results divide into 3 parts:

1. Demographic Profile
2. Water-Based Activities Experience
3. Opinions regarding water-based activities in Phuket and surrounding area

Quantitative Results Part 1: Demographic Profile

The respondents comprised 59.0% male and 41.0% female. The two major age groups of the respondents were 25-40 years (55.6%) follow by 41-55 years (31.5%). The respondents "home" regions were mostly East Asia (39.8%) followed by Europe (32.9%) and The Americas (16.3%). Most had a marital status of single (53.2%) follow by married (35.9%). The educational levels of the respondents were mostly Bachelor Degree (32.0%), followed by Master Degree (22.9%). Occupations of the respondents were mostly professional (32.5%) and corporate (24.1%). Annual incomes of the respondents were mostly \$25,001 - \$49,999 (17.8%) with 17.1 % showing incomes of \$100,000 or above; a similar proportion responded "Do not wish to answer" (17.8%).

Part 1 - Demographic Profile Interpretation and Relevance:

Gender and age distributions were defined by an active "wealthy" Thai (domestic) tourist demographic and a British dominated European tourist demographic, with half as many Americans arriving as Europeans. Both groups were comprised primarily of younger, well-educated, professional, corporate or self-employed tourists.

Table 4.1 Personal Characteristic of respondents

Personal Characteristic		Frequency	Percentage
Gender	Male	<u>242</u>	<u>59.0</u>
	Female	168	41.0
	Total	410	100.0
Age	Under 25	22	5.4
	25-40 years	<u>228</u>	<u>55.6</u>
	41-55 years	<u>129</u>	<u>31.5</u>
	56-60 years	17	4.1
	More than 60 years old	14	3.4
	Total	410	100.0
Country and Region of Residence	<i>East Asia</i>	<u>163</u>	<u>39.8</u>
	Thailand	(83)	(20.2)
	Singapore	(21)	(5.1)
	Hong Kong	(16)	(3.9)
	China	(14)	(3.4)
	India	(2)	(0.5)
	Japan	(9)	(2.2)
	Korea	(2)	(0.5)
	Malaysia	(9)	(2.1)
	Taiwan	(1)	(0.2)
	Vietnam	(6)	(1.5)
	<i>Europe</i>	<u>135</u>	<u>32.9</u>
	United Kingdom	(63)	(15.3)
	Germany	(23)	(5.7)
	France	(8)	(2.0)
	Russia	(7)	(1.7)
	Spain	(7)	(1.7)
	Holland	(4)	(1.0)
	Switzerland	(4)	(1.0)
	Turkey	(4)	(1.0)
	Norway	(3)	(0.7)

Table 4.1 Continued

Personal Characteristic	Frequency	Percentage
Finland	(3)	(0.7)
Denmark	(2)	(0.5)
Sweden	(2)	(0.5)
Belgium	(1)	(0.2)
Italy	(1)	(0.2)
Kazakhstan	(1)	(0.2)
Poland	(1)	(0.2)
Portugal	(1)	(0.2)
<i>The Americas</i>	67	16.3
United State of America	(34)	(8.2)
Canada	(18)	(4.4)
Brazil	(8)	(2.0)
Argentina	(6)	(1.5)
Bermuda	(1)	(0.2)
<i>Oceania</i>	29	7.1
Australia	(28)	(6.8)
New Zealand	(1)	(0.2)
<i>Africa</i>	9	2.2
South Africa	(7)	(1.7)
Morocco	(2)	(0.5)
<i>Middle East</i>	7	1.7
Egypt	(5)	(1.2)
Kuwait	(1)	(0.2)
Saudi Arabia	(1)	(0.2)
Total	410	100.0
Marital Status		
Single	<u>218</u>	<u>53.2</u>
Married	<u>162</u>	<u>35.9</u>
Divorced	26	8.8
Widowed	4	1.0
Total	410	100.0

Table 4.1 Continued

Personal Characteristic		Frequency	Percentage
Education	Lower than high school	7	1.7
	High School	67	16.3
	Diploma	40	9.8
	Bachelor Degree	<u>131</u>	<u>32.0</u>
	Graduate	46	11.2
	Master Degree	<u>94</u>	<u>22.9</u>
	PhD	23	5.6
	Other	2	0.5
	Total	410	100.0
Occupation	Self Employed	56	19.0
	Government	33	11.2
	Corporate	<u>71</u>	<u>24.1</u>
	Student	11	3.7
	Housewife	6	2.0
	Professional	<u>96</u>	<u>32.5</u>
	Other	22	7.5
		Total	410
Income	Foreigner (Yearly)		
	Less than \$25,000	58	14.1
	\$25,001 - 49,999	<u>73</u>	<u>17.8</u>
	\$50,000 - 74,999	53	12.9
	\$75,000 - 99,999	26	6.3
	\$100,000 or above	<u>70</u>	<u>17.1</u>
	Thai (monthly)		
	Less than 10,000THB	4	1.0
	10,001 - 20,000THB	10	2.4
	20,001 - 30,000THB	14	3.4
	30,001 - 40,000THB	11	2.7
	More than 40,000THB	18	4.4
	Do not wish to answer	<u>73</u>	<u>17.8</u>
	Total	410	100.0

Part 2: Water-Based Activities Experience.

This Likert scale uses a 5-point numerical scale ranged from 1 Very Low (not important) to 5 Very High (vitally important) with a midpoint of 3 Medium (important).

Table 4.2 Interpretation of the interval scale

Mean Score	Level of Importance
4.21 – 5.00	Very High
3.41 – 4.20	High
2.61 – 3.40	Medium
1.81 – 2.60	Low
1.00 – 1.80	Very Low

The interpretation was done based on the interval scales as shown in table 4.2

Table 4.3 How important it is to be environmentally aware

Factor	Important	Frequency	Percent (%)	Level of Important
To be	Vitally Important	234	57.1%	<i>Mean = 4.43</i> Very High
Environmentally	Very Important	133	32.4%	
Aware	Important	33	8.0%	
	Of little Important	7	1.7%	
	Not Important	3	0.7%	

At the beginning of the questionnaire the researcher asked the respondent to rate how important it was to be environmentally aware. The results produced a mean for this question of 4.43, which was in the range of “very high”. It shows that most tourists who have used water-based activities think it was very important to be environmentally aware. However, there was still 0.7 percent who thinks environmental awareness was of “very low” importance.

The respondents were asked to rank their reasons for coming to Phuket. The primary reason was for “holiday” (44.4%), followed by marine, water-based activities (39.3%). It was worth noting that 54.1% of respondents gave no secondary reason for their trip, which emphasizes the importance of marine, water-based activities as the main objective of

holidaymakers; especially bearing in mind that many respondents who described their primary reason as “Holiday” will go on to do some or many other water-based activities. In addition, there were some sub-groups who have made their trip with the intention of pursuing one primary activity, scuba diving or deep-sea fishing, for example, but who will also take part in other activities: some respondents used the “Holiday” response when answering this question. 20.2% gave “Holiday” as their secondary reason and 20.0% marine, water-based activities.

The most striking result from Table 4.4 was the absolute dominance of leisure (in which was included “Marine, Water-based activities” and “Holiday”), showing 83.7% of the total respondents came for leisure rather than any other activity. The eminence of “Business” as the next most common reason to visit Phuket (9.3%) should be noted.

Table 4.4 Reason come to Phuket

Rank Reason come visit Phuket	1 st		2 nd		3 rd		4 th		5 th	
	Fre	%	Fre	%	Fre	%	Fre	%	Fre	%
Marine, Water-based activities	161	39.3	82	20.2	3	0.7	7	1.7	-	-
Holiday	<u>182</u>	<u>44.4</u>	<u>83</u>	<u>20.2</u>	5	1.2	1	0.2	-	-
Visit Friends	16	3.9	17	4.1	7	1.7	1	0.2	-	-
Business	38	9.3	5	1.2	7	1.7	1	0.2	-	-
Other	12	2.9	1	0.2	1	0.2	-	-	1	0.2
Not Select	1	0.2	222	54.1	387	94.4	400	97.6	409	99.8
Total	410	100.0	410	100.0	410	100.0	295	100	410	100

The respondents were asked to prioritize their activities, as shown below in Table 4.5. Scuba diving (77.8%) was by far the most selected water-based activity, followed by snorkeling (12.4%). The fact that Scuba Diving as a primary activity was larger than its nearest rival, snorkeling (319 responses as opposed to 51). In the group showing their secondary activity, Snorkeling was also greater than its nearest rival (88 responses as opposed to 19). This allows two inferences: a) that Scuba Divers were very focused in their objectives and go on holiday with the specific objective of diving, and b) that Snorkeling, as opposed to Scuba-diving (or kayaking or jet-skiing, for example) was conclusively the holidaymaker’s second choice of water-based

As shown below in Table 4.6, the Similan Islands (55.9%) was the most visited location followed by Phi Phi Island (47.1%) and Racha Yai/Racha Noi (35.9%). It can be seen that when combined into one group, the islands and the beaches dominate as the most visited locations.

Table 4.6 Locations Visited

Rank	Location	Frequency	Percentage
1	<u>Similan Islands</u>	<u>229</u>	<u>55.9</u>
2	<u>Phi Phi Island</u>	<u>193</u>	<u>47.1</u>
3	<u>Racha Yai and Racha Noi</u>	<u>147</u>	<u>35.9</u>
4	Patong Beach	96	23.4
5	Kata Beach	72	17.6
6	Phang Nga Bay	56	13.7
7	Karon Beach	52	12.7
8	Coral Island	36	8.8
9	Naihan Beach	28	6.8
10	Other Location	21	5.1
11	Ya nui Beach	15	3.7
12	Dive site around Phuket (Shark Point/King Cruiser/Koh Dok Mai, Kamala)	12	2.9
13	Nai Yang Beach	11	2.7
14	Maikhow Beach	10	2.4
	Naithon Beach	10	2.4
	Surin Island	10	2.4
15	Kamala Beach	7	1.7
16	Kata Noi Beach	5	1.2

As shown in Table 4.7 below, the study also examined the environmental awareness of tour operators, tour guides and tourists. 75.4% of the tourists had used tour-guides and 24.6% had not. The study shows that 91.6% of guides were concerned about the environment. Anecdotally, it was indicated that some of them had relevant knowledge of wildlife and the

environments in which they conduct their business. Some guides have actively implemented good practices that help care for and preserve their environment, for example, by picking up the trash on coral reefs during scuba diving trips and stopping divers from touching and therefore damaging the coral. In addition, some of the guides explained to the tourists what were good behaviors and good practices which also help care for and preserve the environment. There were, however, some respondents who noted that they received no information from their guides about taking care of the environment.

Table 4.7 Environmental Awareness of the Guides

	Frequency	Percent (%)
Have you used a tour guide for water – based activities?		
Yes	309	75.4
No	101	24.6
Total	410	100.0
If yes, Did your guide appear to be concerned about the environment?		
Yes	283	91.6
No	26	8.4
Total	309	100.00
(101 respondents did not use a guide)		

Table 4.8 below shows that suggestions from the guides during water-based activities were very important to inform and remind tourists of good practices and behaviors, which were an extension of good environmental awareness. “Do not touch the coral while scuba diving or snorkeling – (88.67%)” was the most common advice from guides to tourists; followed by “Do not leave trash behind, throw it in the bin – (70.87%)”. Ideally, all these answers should be 100%.

Difficult logistics prevented the acquisition of more sample data for respondents visiting caves, which were mostly in the Phang Nga Bay area and remote from this researcher. Only 28.48% of respondents were told “Do not stray away from paths, tracks and designated swimming routes” showing a lack of active concern among tour operators and tour guides about

good environmental awareness and practices, especially in new locations that have not yet been damaged by touristic activity. Only 38.19% of respondents were advised “Do not feed the wild life” again showing room for improved awareness and operating practices among operators and guides.

Table 4.8 Environmental awareness suggestions given by tour guides (calculate from n =309)

Suggestion on environmental awareness from Guide	Frequency	Percent (%)
Do not touch the coral while scuba diving or snorkeling	274	88.7
Do not leave trash behind, leave it in the bin.	219	70.9
Do not collect or destroy any natural flora or fauna, “leave only your footprints”.	175	56.6
Do not feed wildlife (e.g. monkeys, fish, etc).	118	38.2
Do not stray away from the path, track, swimming route, etc.	88	28.5
Do not touch stalactites or stalagmites when visiting caves.	62	20.0
Do not make loud noises when entering tourist destinations (e.g. when in mangrove forests).	55	17.8
Other	9	2.9

Table 4.9 below shows that 91.59% of respondents received some form of advice about good environmental practices: for example, correct behavior while scuba diving when close to large pelagic species; marine life behavior, and preservation of the coral and marine life. It should be noted, however that a quarter of the total sample (309 + 101) did not use guides: a significant proportion who may or may not observe good practices.

Table 4.9 Environmental related knowledge of water-base activities during your trip?

	Frequency	Percent (%)
Did you receive any environmental related knowledge of water-base activities during your trip		
Yes	283	91.6
No	26	8.41
Total	309	100.0
(Don't use guide 101 person)		

In Table 4.10 below, the researcher asked the respondents about information they received concerning good practices that should be applied in water-based activities. As can be seen from the table below, the most common advice given to tourists falls in the “medium” grade, The one exception to this was “Limiting the number of tourists visiting a particular tourist attraction.” with mean score of 2.40 in the “low” grade. It was the most cause for concern and improvement, as can be seen by interpreting the low mean score on the interval scale: obviously the more tourists there were visiting a location the greater the adverse impacts on that location.

Table 4.10 Practices applying in Phuket and surrounding area

Factor	Practices	Frequency	Percent (%)	Level of Practice
Giving suggestions and warnings for environmentally friendly behavior of tourists.	Excellent	58	14.1	<i>Mean = 3.2</i> Medium
	Good	103	25.1	
	Average	149	36.3	
	Poor	74	18.0	
	Very Poor	26	6.3	
Educating tourists by providing environmental information on the destinations.	Excellent	57	13.9	<i>Mean = 3.2</i> Medium
	Good	101	24.6	
	Average	143	34.9	
	Poor	78	19.0	
	Very Poor	31	7.6	
Conservation of coral reefs.	Excellent	53	12.9	<i>Mean = 3.0</i> Medium
	Good	82	20.0	
	Average	135	32.9	
	Poor	98	23.9	
	Very Poor	42	10.2	
Conservation of the natural environment	Excellent	42	10.2	<i>Mean = 2.9</i> Medium
	Good	71	17.3	
	Average	152	37.1	
	Poor	96	23.4	
	Very Poor	49	12.0	

Table 4.10 Continued

Factor	Practices	Frequency	Percent (%)	Level of Practice
Conservation of Mangrove forests.	Excellent	34	8.3	<i>Mean = 2.9</i> Medium
	Good	61	14.9	
	Average	183	44.6	
	Poor	91	22.2	
	Very Poor	41	10.0	
Conservation of the natural flora and fauna (plants and animals)	Excellent	41	10.0	<i>Mean = 2.9</i> Medium
	Good	74	18.0	
	Average	152	37.1	
	Poor	103	25.1	
	Very Poor	40	9.8	
Clean garbage areas and waste management.	Excellent	38	9.3	<i>Mean = 2.9</i> Medium
	Good	75	18.3	
	Average	141	34.4	
	Poor	103	25.1	
	Very Poor	53	12.9	
Water pollution management.	Excellent	40	9.8	<i>Mean = 2.8</i> Medium
	Good	66	16.1	
	Average	138	33.7	
	Poor	121	29.5	
	Very Poor	45	11.0	
Separating recreational activity areas (Zoning e.g separating Jet Skiing from Mangrove Forests)	Excellent	35	8.5	<i>Mean = 2.8</i> Medium
	Good	57	13.9	
	Average	146	35.6	
	Poor	124	30.2	
	Very Poor	48	11.7	

Table 4.10 Continued

Factor	Practices	Frequency	Percent (%)	Level of Practice
Air pollution management.	Excellent	37	9.0	<i>Mean = 2.8</i> Medium
	Good	37	9.0	
	Average	180	43.9	
	Poor	110	26.8	
	Very Poor	46	11.2	
Noise pollution management.	Excellent	24	5.9	<i>Mean = 2.6</i> Medium
	Good	35	8.5	
	Average	170	41.5	
	Poor	131	32.0	
	Very Poor	50	12.2	
Limiting the number of tourists visiting a particular tourist attraction.	Excellent	31	7.6	<i>Mean = 2.4</i> Low
	Good	28	6.8	
	Average	109	26.6	
	Poor	149	36.3	
	Very Poor	93	22.7	

Part 3: Opinions regarding water-based activities in Phuket and surrounding area.

This research shows that respondents have a high satisfaction with water-based activities, with a mean of 4.06, as shown below in Table 4.11.

Table 4.11 Water-Based Activities Satisfaction.

Factor	Satisfied	Frequency	Percent (%)	Level of Important
How satisfied were you with your water based activity	Vitally Satisfied	147	35.9	<i>Mean = 4.0</i> High
	Fairly Satisfied	165	40.2	
	Neutral	78	19.0	
	Somewhat Unsatisfied	16	3.9	
	Very Unsatisfied	4	1.0	

Table 4.12 below shows that 84.4% of the respondents planned to return for more water-based activities in the future. The most common activities tourists wish to return to do were scuba diving and snorkeling. 89.5% of tourists said they would recommend friends or relatives to join water-based activities in the future. 12.7% said they did not want to come back because they think the coral reefs were not in good condition as they can go other countries and areas with more healthy coral reefs and 8.8% don't want to suggest water-based activities to them friends or relative. Only 2.4% of the respondents collected or removed plants or animals, and these were mostly seashells or broken coral on the beaches. This implies less people negatively impacting their holiday environment and implies that this figure could improve to 0% in the future. 36.3% of respondents said that, where possible, they wanted to move off the designated paths, tracks or swimming routes. The main reason given by respondents was to get away from crowded areas. 62.0% said they didn't want to go out of the path for safety reasons and they didn't want to cause damage to the environment, which indicates an informed and concerned attitude in a satisfyingly high proportion of respondents.

Table 4.12 Opinions regarding water-based activities in Phuket and surrounding area

	Frequency	Percentage (%)
Do you plan to return for more water-based activities in the future?		
Yes	346	84.4
No	52	12.7
Other	12	2.9
Total	410	100%
Will you recommend your friends and relatives to join water-based activities in the future?		
Yes	367	89.5
No	36	8.8
Other	7	1.7
Total	410	100%

Table 4.12 Opinions regarding water-based activities in Phuket and surrounding area

	Frequency	Percentage (%)
During your trip, did you collect any natural plants or animals?		
Yes	10	2.4
No	400	97.6
Total	410	100%
If possible, did you want to travel outside of the path, track, swimming route, etc ?		
Yes	149	36.3
No	254	62.0
Maybe	7	1.7
Total	410	100%

As shown below in Table 4.13, the behavior of tourists and operators during their trips: 24.6% of respondents experienced poor environment management from the tour operators, for example, some speed boat tour-staff were seen throwing trash in the water; putting aluminum tins in normal trash-cans instead of the recycling containers and some tour operators who did not stop tourists feeding fish.

Some scuba divers commented that some tour operators did not stop people from using gloves and touching the corals. The respondents think that tour operators put too many tourists in the same area, which makes the area too crowded and increases damage to those areas. They also commented there were not many briefings about the importance of keeping the areas clean and safe.

The research shows that 39.8% of the respondents saw behavior by other tourists that made negative impacts during water-based activities, such as some tourists standing on the corals; throwing cigarette-ends into the sea; tourists leaving the trash behind. Scuba diving respondents made many comments about divers touching corals; tourists using gloves and holding on the reef; and too many divers at the same dive site.

Limiting the number of visitors was the issue of most concern to the respondents. Tourists still see fishing boats fishing illegally in some water-based activities areas: dive sites were suffering destructive fishing techniques and coral reefs were covered in lost fishing nets.

This requires local and national government action to implement and enforce laws including preventative and punitive consequences for the perpetrators of these illegal practices.

Table 4.13 Tourists and Tour Operators behavior during water-base activities

	Frequency	Percentage (%)
Did you see any examples of poor environmental management by the Tour Operators during your water-based activities?		
Yes	101	24.6
No	309	75.4
Total	410	100%
Did you see any examples of behavior that make negative impacts by other tourists during your water-based activities?		
Yes	163	39.8
No	247	60.2
Total	410	100%

Opinions regarding water-based activities in Phuket and surrounding area - Open End Questions

Table 4.14 below shows how the researcher classified the answers of the respondents in to 33 classifications closely related to either beneficial or detrimental environmental behavior.

Table 4.14 Comments classified into 33 Environmental Issues.

Environmental Issue	Condition	Description
1	Regulation	Requiring National and/or international cooperation & regulation.
2	Enforcement	Requiring enforcement managed at a national level

Table 4.14 Continued

Environmental Issue	Condition	Description
3	Close Sites	Sensitive sites some say require closing to allow them to recover: critical environmental situation.
4	Overcrowding	Requiring better natural resources management and local knowledge
5	Natural Resource Management - Local Government	Requiring action at local government level, includes some enforcement of regulations.
6	Ban Light Fishing	Also requiring regulation and enforcement.
7	Ban\better control commercial fishing	Also requiring regulation and enforcement.
8	Research other countries practices	Investigate how other countries have successfully managed similar problems. Learn from them.
9	Bad environmental practices	This classifies a comment where the action is bad environmental practice.
10	Education & Training needed	Education, training, briefing, awareness, campaigning is referenced.
11	Zoning	Also requiring local or national regulation and enforcement.
12	Good environmental practices	This classifies a comment where the action is good environmental practice.
13	Tour Operator Performing Badly	
14	Feeding fish	
15	General Littering, Tour Operator	
16	Damaging Coral through contact or bad practice	

Table 4.14 Continued

Environmental Issue	Condition	Description
17	Tour Operator not following good practices	
18	Local people not following good practices	
19	Tourists touching marine flora and fauna	
20	Tourists touching/collecting non-marine fauna (monkeys)	
21	Commercial fishing in areas not allowed	
22	Anchoring on coral reefs	
23	Jet Skis	This includes noise pollution and dangerous activities where Jet Skis are mixed with other activities.
24	Tourists collecting souvenirs, marine flora and fauna	
25	Oil Spill	From commercial, fishing and leisure boats
26	Untreated Sewage	
27	Poor training	
28	Poor Diving Training	
29	Tourist not following Good Practice	
30	Tour Operator not enforcing good practices	
31	General Littering, Tourist	
32	Cigarette Littering, Tour Operator	
33	Cigarette Littering, Tourist	

Poor environmental management by the Tour Operators during your water-based activities

The researcher asked tourist if they had seen any examples of poor environmental management by the Tour Operators during their water-based activities. From this question there were a total of 68 comments from 410 respondents, the most common response was “Tour Operator not following good practices” with 23 comments. Example comments include, “Operator let tourists walk underwater and touch coral”, “Guide bring up/ touch the coral or marine life to show the divers”, and “Snorkels operators have poor regard for the environment, allow customers to trample on coral, touch marine life.” The second most common response was “General Littering by Tour Operator”, with 20 comments. Examples were, “Throw trash into the water”, “they throw everything in the water” and “Dumping garbage from tour boats”. The third highest group of comments concerned “Oil Spill” and “Feeding Fish” with 10 comments, for example “boat have oil spill on the water”, “diesel leaking into the sea from the boat.” and “fish feeding. Anchoring on corals. Oil leaking from engines”. This clearly shows that some tour operators and staff were not following good practices. Also worth mentioning here, because the same issues were repeatedly found throughout the other surveys conducted, were issues “Cigarette Littering, Tour Operator” (5 comments), “Natural Resource Management - Local Government” (4 comments), “Overcrowding” (3 comments). Issue “Anchoring on coral reefs” (5 comments) deserves a mention because this behavior has a devastating effect and can kill whole sections of coral reefs: a very major adverse environmental impact.

Behaviors that make negative impacts by tourists during water-based activities

The researcher asked tourists if they saw behaviors by other tourists during their water-based activities that had negative impacts. There were total of 118 comments from 410 respondents, the most common comment was “Tour Operator not enforcing good practices” with 45 comments. Although strictly speaking this question should be part of the previous question 6 because it refers to Tour Operator behavior, not Tourist behavior, it was shown here because it highlights the link between poor Tour Operator enforcement of good behaviors and the “bad” behaviors of tourists. This particularly applies to issues of littering and also good diving practices. Example comments were, “Divers playing hide and seek in the coral and constantly breaking off corals”, “some tourist deposit of trash to the sea”, “divers using reef hooks while diving”. The

second most common comment was “Tourists touching marine flora and fauna” with 37 comments. This also links to the question of Tour Operator enforcement: a pre-dive briefing would inform tourists of what was, and what was not, acceptable. The third most common comment was “General Littering by Tourist” with 34 comments. Littering was also linked to lack of enforcement issues. Example comments were, “not put rubbish in the bin”, “too many people, too much trash, not enough rubbish bins not regularly maintained. Not enough briefings about the importance of keeping our places clean and safe. A lot of people just don’t care.” This question shows that many tourists don’t follow rules: this could be an enforcement and briefing problem as previously mentioned. It also highlights the fact that some tourists lack even basic environmental awareness, which in turn connects to the “Education” issue. Local government also needs to be stricter about regular rubbish collections and they should provide more trash bins in all tourist areas.

Tourist recommendations regarding water-based activities and the environment in Phuket.

The researcher asked tourists for their recommendations regarding water-based activities and the environment in Phuket. There were total of 143 comments from 410 respondents, the most common comment was “Natural Resource Management – Local Government,” with 56 comments. Examples were, “Conserve dive sites and natural habitat before irreversible destruction is done”, “Keep working on making people more aware. Limit the number of day boats to areas.” and “Law limit number of tourists, they hurt the environment. Create expensive fines for environment destruction, then use money to protect the environment.” The second most common comment was “Overcrowding” with 41 comments, which was an issue that also connects directly with “Natural Resource Management – Local Government,” Examples were, “limit number of visitors”, “Some dive sites were very busy, reduce the amount of boats allowed on a site at same time.” These answers also imply the need for better natural resources management and local knowledge to help resolve environmental problems. The third most common comment was “Good environmental practices” with 33 comments, an example comment was “More protection on the coral reefs/ separation of trash/ less fishing.” and “More preserve the coral reef, reduce the use of plastic PET bottles or plastic product when travel to the island.” “Regulation” was the next most common comment with 32 comments. Examples were,

“Operators must first be educated about the environment practices. Licensing should take into consideration of the capability of operators to uphold good environmental practices” and “Stop over fishing and stop shark finning.” and “The Similan Islands is an amazing asset for Thailand and potential world-class destination. But despite an expensive marine park fee, it is obviously being fished. Boats could be seen fishing within 3 km of the islands, plus the dive guides report a decline in sharks, jacks etc. I am a marine ecologist and fish specialist. This must be addressed or people will stop coming.” This issue was also related to the fourth most common comment, “Education and Training needs”, with 20 comments, because the enforcement issues involved in monitoring activities across such a large marine environment requires many stakeholders to be self-regulating: this requires knowledge, education and training, as well as regulation. Example for “Education and Training needs” were, “Keep working on making people more aware.”, “Education and care of reef and marine life and public education.” and “I think there should be someone to tell you that what you should do and what you should not do while having your water based activities.” Also worth mentioning because it was an issue that occurs so often throughout the surveys was “Enforcement” scoring 15 comments. An example was “The police need to get a grip on the situation and the government needs to implement laws and consequences for illegal practices.” Also worthy of mention were “Bad environmental practices”, “Poor training”, “Close Sites” and “Zoning” all scoring between 5 and 10 comments) and which all link to the above mentioned issues.

Tourists' advices for the improvement of sustainable water-based activity development in Phuket

The researcher asked for suggestions from tourists for the improvement of sustainable water-based activity development in Phuket. The most common comments were about “Natural Resource Management - Local Government.”, with 61 comments Examples were, “Close certain dive site for few years to let the coral grow. Sink some old ships to make artificial reefs.”, “Limit tourist numbers and limit fishing activities. Government should be more serious about fishing in the National Park areas. Limit the number of dive operator in each dive site.” The second most common comments were “Regulation” with 39 comments. Examples were, “Please limit fishing boats and limit fishing activities. Please control pollution and work to clean up existing. Do not allow fishing boats on the same location. We had 22 fishing boats on site. It was

horrible.” This comment refers to the illegal commercial fishing in prohibited areas and directly calls for regulation and enforcement by the authorities. Next most common were “Good environmental practices” with 32 comments, “Enforcement” and “Overcrowding” both with 27 comments. Again, all these link in some way or another to “Natural Resource Management - Local Government.” And all feature prominently in other survey data in this paper.

Summary of Open-end Questions

All of the responses to the open-end questions can be further categorized into two main areas of concern (“Good Environmental Practices” and “Bad Environmental Practices” being simply descriptions of behaviors).

These two groups are:

Natural Resources Management, Regulation & Enforcement: This includes National and Local Government organizations, existing or required regulations and enforcement. Only local or national organizations are able to enact regulations and provide enforcement. Nearly all of the environmental impacts detailed in this study were in some way connected to these organizations and regulations. The issues in this group were:

Anchoring on coral reefs	Ban Light Fishing
Ban\better control commercial fishing	Close Sites
Commercial fishing in areas not allowed	Jet Skis
Oil Spill	Overcrowding
Poor Diving Training	Poor training
Tourists collecting souvenirs, marine flora and fauna	Untreated Sewage

Zoning

Education, Briefings and Training: this applies to both the tourists as well as the tour operators. The issues in this group are here because the detrimental impacts on the environment were due to a lack of awareness, poor training and tour briefings. Of special note here is “Research other countries practices” because this was the only issue that can be regarded as a good practice that requires research and education. The issues in this group are:

Cigarette Littering, Tour Operator	Cigarette Littering, Tourist
Damaging Coral through contact or bad practice	Feeding fish
General Littering, Tour Operator	General Littering, Tourist

Local people not following good practices	Jet Skis
Poor Diving Training	Poor training
Tour Operator not enforcing good practices	Research other countries practices
Tour Operator not following good practices	Tour Operator Performing Badly
Tourists collecting souvenirs, marine flora and fauna	Tourist not following Good Practice
Tourists touching/collecting non-marine fauna (monkeys)	Tourists touching marine flora and fauna

It must be noted that the responses concerning jet skis, tourists collecting souvenirs, poor training and poor diver training can be applied to both of the above sub-groups. National government can enact legislation that controls where and how jet skis can operate (including zoning) and that bans the collecting of flora and fauna by tourists. Similarly government can enforce correct training standards as part of the tour operator licensing procedure. Of particular note, because the very detrimental effects of these bad practices, should be control of commercial fishing, anchoring on coral reefs, untreated sewage discharged into the sea, and oil-spillage.

4.2 Qualitative Results from interview Tour Operators

Result Analysis from 16 in-depth interviews with Tour Companies

The Qualitative in-depth interview was divided into two parts, the first part, comprising questions 1, 2 and 9 defined the length of time the Tour Companies had been operating, where they conducted their business, what type of water-based activities they provide and whether their tour guides had approved TAT Guides Licenses and if they were local people. Nine companies have been in operation for more than 4 years while 7 companies have been operating for less than 4 years. All companies conduct their business in the area covered by this paper and they all provide water-based activities. Six companies have guides with TAT guide licenses while ten companies do not (although their staff may have an Instructor or Dive Masters License). The companies selected represent a spectrum that covers suppliers of the most common touristic activities in the most common locations.

The third question, the researcher asks the tour companies about awareness of environmental impacts from water-based activities. All of the companies interviewed claimed to be environmentally aware; ten companies were unable to provide any examples of any impact from water-based activities. Ten companies said they try to minimize adverse environmental impacts and the same number claimed they understood their activities did have an adverse impact on the environment. Two diving companies believe their companies' operations were inherently environmentally aware: while there is some truth in this, it only extends to diving operations. Two of the companies interviewed, a Jet Ski operator and another diving company, said they feel obliged or forced to be environmentally aware by existing regulations. There seems to be a general willingness to accept that good environmental practices were required, a situation that seems well suited to receiving an educational/training campaign. All the examples described refer to one form of good boat handling or another. The most commented problem concerns boat engine oil changes followed by the lack of buoys incorrectly placed or spaced mooring buoys. These comments indicate a need for local government intervention, assistance and enforcement to ensure there were sufficient buoys, correctly installed. Both the engine oil change issue and the issues concerning mooring and buoys were also highlighted in the Open-end question survey.

In question 4 the researcher asked the Tour Operators their understanding of "best environmental practices", 7 companies understand the meaning of "best environmental practices" to be: "Practices that try to have a minimal effect on the environment". Six companies made the similar response, "Activities that do not destroy or damage the natural environment". 4 companies also made a generalized comment about "best environmental practices", believing the answer to be "To coexist with nature and preserve the natural environment". 4 companies mentioned a basic good environmental practice, "Do not litter (cigarette butts, plastic bottles & bags, etc)". "Do not feed fish or other fauna" comes next with 3 companies this issue was also highlighted in other survey data; with the same scores also comes "Best environmental practices are essential for successful business", which displays an understanding that good environmental practices were good for business.

In question 5 the researcher asked the tour operators to describe the activities of the company for preserving the natural environment. 6 of tour operators participate in litter collection as a normal part of their company's activities. Other activities were "Annual or seasonal clean-up

by staff”, “Plant new coral”, “Always uses buoys provided”, “Boat captain must check echosounder before anchoring to not anchor causing adverse impact”, “Reduce use of plastic”. It can be said that there was a good amount of litter education and care going on, but it was spread out between companies and therefore it cannot be said that this was standard practice, it depends on the individual companies concerned. Littering was one of the most commented upon problems in all the surveys. While this is encouraging the figure should be 100%. 4 companies offered no specific regular company activity to help the environment. Both these figures again highlight the need for more education and awareness.

In question 6 the researcher asked the tour operators to share a case study of best environmental practices learned based on their experiences of water-based activities provided to tourists. The results show that 8 companies give some sort of briefing to their customers about good environmental practices. Ideally, this figure should be 100%. 6 companies could not provide a case study of "of best environmental practices learned, based on your experiences of the activities you provide to tourists". Of those companies that did provide examples 6 companies said "Do not step on or touch the coral", 4 companies said "Do not collect "souvenirs" (live coral, shells etc.)". The rest of the examples again become list of good practices which need to be part of a more comprehensive regimen. This was an area where increased education and awareness was required. Interestingly two companies mentioned using social media to raise awareness, an interesting idea that would benefit from further research.

Question 7 asked the tour operators about environmental training provided for the tour company staff and also for the tourists. A figure of 6 companies said "[Our] Staff already know about good practices" was less than would be desired and implies there was no training or information program in place. It was, however, encouraging to see companies responding to training requirements. However, the overall results for staff training were disappointing. The comment by one company “I always see tourist feeding the fish with bread but our company tells them to feed the fish with fruit”, this shows an important need for education and training.

With regard to "awareness training for tourists" again the results were patchy. 9 companies provide some sort of tour briefing for tourists, but the rest of the responses were too indistinct, indicating a scarcity of answers to this part of the question.

Question 8 asked the tour operators if they had ever read the tourism activity standard TAT Guide Book or the National Park Guide Book. None of the operators interviewed had ever seen the TAT guide book. It shows that TAT should have been more successful in providing good environmental practices information to all of the tour operators. It will be a recommendation of this paper that the licensing of Tour Operators should be subject to them understanding and agreeing to abide by all rules and restrictions described in what needs to be a new TAT Handbook. It is envisioned that all Tour Operators will have to have been trained according to a TAT curricula before being granted a Tour Operator's License. Only one company had seen the National Park Guide Book.

Question 10 asked which nationalities seemed to care most and which seemed to care the least about the environment. The result was Europeans (including British) care most about the environment followed by the Scandinavians. The next three caring groups were Australians, Americans and Japanese. These were all regions where "the environment" is well reported and monitored both by the national peoples and also by the press and governments. The most disappointing results for who cares least were the Chinese, Russian and Asian (not including Japan) and Korean.

Question 11 asked the tour operators to say which water-based activities damage the environment in Phuket and the surrounding islands. The three main activities in the opinion of the tour operators that cause the most environmental damage were Seawalker followed by commercial net fishing and snorkeling. These problems require action on different levels; for example, the problem with commercial fishermen requires national legislation and enforcement. The problem with snorkeling is more addressed by educating and creating awareness among the tourists themselves, as well as educating the tour operators to train their own staff and educate their tourist groups. The remaining activities also require different solutions of one kind or another. This is also an area that would benefit from more study.

Taken together the most comments, which were "Seawalker", "Commercial net-fishing boats", "Snorkeling", "Fish feeding", "Speedboats/boat anchoring on coral" and "Big commercial fishing boats: oil spills/leaks" can be regarded as a prioritized list of the seven most damaging activities in the minds of respondents.

Question 12 asked the tour operators if they had any association with organizations that try to reduce adverse impacts on the environment, 6 out of 16 companies said they did not know or have dealings with any organization or club that help to minimize impacts on the natural environment?" It was good to see the remaining majority of companies do have some sort of official link in their efforts to maintain an ideal natural environment. The organization most tour operators (4 companies) participated with was the Marine and Coastal Resources Department. Other organizations the companies have participated with were Phuket Marina, the local municipality, Green Fin, Go Eco Phuket, and Project Aware from PADI.

The researcher asked the tour operators for their recommendations to improve water-based activity, for the protection, reduction or minimizing of negative impacts on the natural environment. The top three issues, all with 3 responses were, firstly, a call for an information campaign for "stakeholders", secondly, "Do not dump trash into the sea" and the third addressed the issue of untreated sewage being dumped into the sea.

This was an extremely open question and elicited many observations that were supported or recommended by this paper. So many of the issues raised were of equal importance, even though only one company may have made this response. Some issues, such as the lack of mooring buoys and their poor placement and installation require urgent national and/or international government action. This includes the proper regulation of commercial fishing, including enforcement of prohibited areas; the prevention of overcrowding; the promotion of "more motivation in state organizations to ensure sustainable marine tourism"; "More effective use of tax revenue to ensure good environmental practices, enforcement of legislation, etc". Some issues require local government or local organization action the most important of which was ensuring proper waste treatment in tourist locations (hotels and businesses) and on live-aboard boats (including oil spills). Another important issue raised requiring local government action was the closure of some tourist locations to allow nature to recover. There were also calls for better environmental training for divers; better information given to snorkelers to prevent damage; better training for tour operators.

The most common theme running through almost all these comments was for local government to become more involved, in one way or another, in protecting and sustaining the

marine environment, whether that be regulating the local fishing industry or publishing and promoting advice for tourists.

4.3 The summaries analysis of Qualitative Questionnaire and Open-end result

4.3.1. Awareness of environmental impacts from water-based activities.

All companies said that they were aware of environmental impacts but some of the tour operators did not understand full impacts that can arise from activities such as snorkeling speedboat tours. Two companies said that they do not have any environmental impacts from snorkeling activities. They comment that the tourists just stay on the surface of the water and that tourists therefore do not have any contact with the coral. They also commented that they do not think that sometime fins can hit the coral in shallow water. One of four speedboat tours were aware that 2-stroke speedboat engines cause higher pollution than 4-stroke engines, but said that it was too expensive to change the engines to 4-stroke because their price was double that of the more polluting engines. The big-boat snorkeling companies said they were aware of the damage caused by putting their anchors in reef areas, but that they “had no choice” because sometimes the required mooring was too far from the snorkel area or too far from the beach. They also commented that they always check before putting the anchor down.

4.3.2. Understanding of the “Best Environmental Practices” (BEP)

The tour operators understand that harmonious co-existence between humans and nature was very important; that operators should always take care of the natural environment as much as possible and everything they do must have as little impact as possible on the environment. They commented that while using the natural environment as a touristic resource, those touristic activities should not damage the environment. It was apparent that tour operators understood how important “Best Environmental Practices” were, but some of the tour operators still do not understand the impact of their activities. For example, one fishing tour operator said all trash they generate during the trip was always brought back to the shore for proper disposal, but food waste was thrown into the sea to feed the fish and to entertain the tourists, despite that fact that this was a negative environmental impact (Oram, 2002). The reason given for doing this was the inaccurate belief that because food comes from “nature” it does no harm to throw foodstuffs into the sea. One of the big-boat snorkeling tour operators also confirms that they still

have seen fish feeding from other snorkeling tours during their tours, again unaware of the negative impacts this causes. This clearly shows that some of tour operators do not understand the impact of feeding fish. The jet-ski operators said they understand that 2-stroke engines cause more noise pollution than 4-stroke engines and they repeated the comment about the more expensive price of the 4-stroke engines. However, they said they do not think noise was a problem because the beaches have zones set aside for this activity and the jet-skis only make noise at the beginning and end of a tourist's ride because they all drive their jet-skis far from the beach.

All of the above comments highlight the need for a better application and understanding of BEP, which will then improve the protection of the environment and create a more sustainable form of tourism.

4.3.3. Activities of the tour operators that preserve the natural environment and a case study.

Beach clean-up during a tourist's trip was an activity that most tour operators offer. Some tour operators have joined organizations to make mooring line areas or have joined organizations for making artificial reefs. Some companies comment if guides see trash the guides will pick it up and put in trash bin, but guides cannot force tourists to do this because the tourists have arrived on holiday to relax: it was a decision made independently by each tourist. Some tour operators, such as Jet Ski providers on Surin beach and the water theme park on Lhon Island, work together with local hotels to clean-up beaches. Scuba-diving tour operators always make a special "Clean Up" event, which was derived from the "Go Eco Phuket" initiative. They have made this an annual event and they get the support boats from diving-boat tour operators from Phuket and the surrounding area to assist. This event has volunteer tourist divers who voluntarily join the cleaning operations. This activity attempts to clean-up all dive sites around Phuket. One of the speedboat-snorkeling companies has activities at the beginning of the tourist season that involves a special clean-up trip for tourists and they inform tourists who might like to join this special trip. However, out of 16 companies the researcher interviewed, only 3 companies joined these clean-up activities. The researcher found that tour operators do not have environmental awareness training for their staff, but all of them tell staff about basic good behavior, such as putting trash in proper bins and not throwing cigarette-butts into the ocean. However, some of the

staff doesn't understand the reasons why doing that was important. The researcher found that none of the tour operators have seen the TAT standard guidebook, which makes recommendations for improved management of the natural environment. Some guides do not have guide licenses, such as scuba dive guide (Dive instructor and dive master) because this activity requires specific knowledge for diving. Operators who provide jet-skis for tourists do not have guide licenses, but all of them have skipper. Some sports fishing tour operators also do not have certified guides working on their boats. One of the scuba-diving shops included on the tour price a donation to a Project Aware started by PADI to help protect the environment.

The researcher has found that tour operators think Europeans, especially Scandinavians, Germans, British, as well as Australians, Americans and Japanese were the most environmentally aware. Asians were less environmentally aware especially Chinese, Koreans, which was also true of Arabs, Russians, Greeks and Italians.

The activities that tour operators think have the most impact to the environment were "sea-walker" activities, followed by snorkeling. However, there were some tour operators who think water-based activities do not impact the environment, but the speedboats and all activities, which use boats that have engines, make impacts to the environment. This was especially true of long-tail boats, which not only have engines that make damaging impacts, but also because the boat itself was smaller than speedboat and does not have a deep draught so can operate in shallow water which may have coral reefs that can be damaged by them. Fishing boats, especially using nets, were one of the problems that tour operators think make big impacts on the environment because fishing boats always come to fish in the tourist areas at night so no one can see them. However, there were some big-boat operators who release wastewater and sewage into the ocean in shallow areas, which also damages the coral reefs. Some tour operators comment that hotels and restaurants also discharge wastewater into the ocean. Some areas in Chalong have wastewater from shrimp farms, hotels and restaurants which was released into the sea. This will kill coral reefs and marine life around these areas. Local people in these areas used to find seashells to cook but have died-out because of too much wastewater going into the sea. Small fish species were not as numerous as they used to be.

Some of the tour operators work together with the Marine Department or Department of Marine and Coastal Resources. There was not much action, however, from those

organizations. Most of the activity consists of meetings between business groups, especially speedboat tour companies. However, if there were any invitations to join any such environmentally friendly activities, the tour operators have said they were always happy to work with these organizations. Scuba-diving tour operators have worked together with the “Go Eco Phuket” project, which is a small organization formed from groups of diving companies who want to protect the marine environment, which is the basis of their business.

4.3.4. Suggestions from Tour operators

Some tour operations suggest that all businesses should work together to create a more sustainable tourist business by effectively training tour guides and giving better information to tourists. Tour operators also suggested there should be a ban on feeding fish.

Zoning areas for different activities: tour operators want the Government and National Parks to take zoning more seriously and implement zoning areas for fishing. They do not think fishing tours make a big impact because tourists do not catch many fish. Sometime fishing boats come to the diving areas, which cause the boats that take the tourists to the scuba-diving areas to have to give-way to the fishing boats. Tour operators complain that Phuket Province officials always say there is not enough money to make the required improvements. The operators do not understand this answer because they believe Phuket generates a lot of income from tourism, including taxes from business in this area. They feel the government do not take these problems seriously enough.

Operators also said that sewerage systems for hotels and restaurants should be improved and that there should be an organization, which checks the systems every year. Tour operators believe most hotels have good sewerage systems but there should be annual performance checks.

They also commented that there were not enough safe and environmentally friendly mooring buoys for the boats operating in the many water-based activity areas. For example, Monkey beach, the Similan Islands and Surin beach. During the peak season there were not enough mooring buoys for the boats. This means that boats have to tie-up with another boat, which was dangerous when there was rough weather, storms or high tides. Boats sometimes have to anchor in areas where the boat operators do not have local knowledge and were unaware they were anchoring on coral reefs. In some areas the government pays for people to make mooring

buoys, but the people who make the buoys do not have enough knowledge and they install the buoys too close to each other or in water that was too shallow and which creates problems when the water was at low tide: this very often makes the buoys unusable. Not only were there not enough buoys, but also sometime buoys were stolen and these can cost over 20,000THB to replace.

Some of tour operators suggest the government should enforce the regulations more forcefully because some of tour operators do not respect the regulations. They believe the Government should be more rigorous about punishing the companies that do not follows the rules and that it should also be more concerned about the regulations for the safety of tourists.

These operators thought that some tour companies, especially the speedboat operators, carry more tourists than was the safe limit for the type of boat and that these companies should be more honest and less greedy when it comes to the safety of tourists. If there was not enough carrying capacity for safety, the booking should be spread amongst other tour companies or keep the booking for the next day. However this was difficult to enforce because of the high competition between the speedboats tour operators. This was especially true concerning trips to Phi Phi Island.

The operators also felt that the Government could enact legislation to lower the price of 4-stroke engines, possibly by lowering the import duty, and provide tour companies with assistance to upgrade their 2-stroke engines. There were thousands of speedboats that would be upgraded and this would produce an immediate improvement to the natural environment, which attracts so many tourists and generates so much revenue for Thailand.

CHAPTER 5

CONCLUSION, DISCUSSION AND RECOMMENDATIONS

5.1. Conclusion

The primary aim of this study is to study water-based activities and sustainable or detrimental environmental practices and behaviors among both tourists and tour providers, and the effect of their behaviors on the environment.

The secondary aim of this study is to propose measures to stakeholders, from tourists, local tour companies and government up to national level, to motivate them to develop and participate in good environmental practices to sustain what is a beautiful natural resource that attracts tourists and is therefore important source of revenue.

The data was obtained of the existing types of activities; the locations of those activities, as well as a demographically representative sampling of respondents, of both tourists and tour providers. The three surveys described below clearly reveal what is of most concern to the respondents and indicates methodologies to achieve the aims of this study. This can be summarized as having a healthy and sustainable marine environment that continues to attract large numbers of tourists.

The first of the three distinct surveys is a Questionnaire (Quantative Results) given to 410 tourists and analyzed using the SPSS program. This includes four open-end questions (considered as the second survey) designed to answer issues raised in 1.4 Research Objectives, and 1.5 and Research Questions. These are questions 6 to 9 of Part 3 of the Questionnaire and there is a separate analysis for this data set.

The Third survey is an in-depth interview with 16 Tour Operators (Qualitative Results).

In addition to these analyses another analysis (the Overlay Analysis) was applied to the results of the Qualitative In-Depth survey. The overlay analysis classified the comments into one or more elements from Table 4.14 "Comments Classified into 33 Environmental Issues". This additional analysis was done for two reasons. Firstly, because during the process of analyzing the results from the Open-end Questions, it became clear that the comments and answers from both survey questions could be classified the same way by using this table.

The second reason was because many respondents answered one question in another question and a method was required to examine the data as a whole. This revealed the five main concerns of respondents to be, Natural Resource Management - Local Government; Good environmental practices; Regulation; overcrowding and Education & Training needed.

Once these 33 classifications were done it was found the responses could be even further simplified and classified in to the two main groups, as mentioned in Ch. 4 "Summary of Open-end Questions." These two groups are: "Natural Resources Management, Regulation & Enforcement" and "Education, Briefings and Training".

Summary of Findings: Quantitative Questionnaire.

From a population of 410 respondents comprising 59.0% males and 41.0% females, there were 55.6% in the 25 to 40 year old age group and 31.5% in the 41 - 55 year old age group. The majority were from East Asia (39.8%) followed by Europeans (32.9%) with about half as many tourists from the Americas (16.3%).

Most respondents were single (53.2%) with 35.9% being married, 8.8% divorced and 1.0% widowed. The educational level of the sample showed 32.0% with Bachelor's Degree, 22.9% with a Master's Degree, a further 11.2% were graduates. More than half of the sample described themselves as "professional" (32.5%) or "corporate" (24.1%). Foreign tourist (non-Thai) annual incomes reflect this grouping with 30.7% in the combined US\$25,000 - US\$74,999 groups and 17.1% in the US\$100,000 and above group. Incomes for the Thai section of the sample showed that out of a total of 57 Thai visitors, 4.4% had an income of more than THB40,000 per month. There were, however, 17.8% who decided not to answer this question. As expected, Thai incomes were well below those of the foreign tourists which may have precluded them from taking part in some of the more expensive activities.

The above demographic data showed a good spread between the sexes as well as a representative number of both Thai and foreign tourists. Incomes and education indicate a group of respondents who were active, young, well-educated and mostly well-paid. It was not a low income group.

The response "How important is it to be environmentally aware?" showed a significant 57.1% in the "Vitaly Important" group, with a further 32.4% saying it was "Very Important" and 8.0% "Important". Therefore, the majority of respondents confirmed this attitude

and, with this in mind, it is curious to see so many “medium” responses in Table 4.10, which prompts fundamental questions about good environmental practices. This may also indicate a reluctance to answer for some reason or else a lack of knowledge on the part of the respondent.

Respondents were asked to prioritize their reasons for choosing Phuket for their holiday destination. 44.4% said “Holiday”, followed by 39.3% who gave “marine, water-based activities” as their primary reason. It should be noted that “Holiday” can include water-based activities, thereby giving a large majority (83.7%) of visitors who came to Phuket for some form of water-based leisure activity as their primary reason. Almost all respondents showed no additional reasons for visiting, reflecting the high number of tourists who came with a specific water-based activity in mind. These results indicate that most tourists had pre-planned their holiday to focus on a particular water-based activity.

The researcher requested the respondents to rank the types of activities in which they participated. This showed an overwhelming response for Scuba Diving (77.8%) and next, although well behind, came Snorkeling (12.4%) and Free Diving (5.6%). This again emphasizes the fact that many tourists in this sample came to Phuket for Scuba Diving. An interesting result in the 2nd Activity column was the 21.5% tourists who came for snorkeling as a second activity. Snorkeling is a very accessible water-based activity which requires no special training or complex equipment and is therefore easily accessible to the vast majority of people. No other remaining activities stand out in the ranking table: again emphasizing the fact that the tourists sampled were focused on a particular water-based activity, mostly Scuba Diving. The researcher requested the respondents to say which locations they had visited and their answers confirmed the Similans (47.1%), Phi Phi Island (55.9%), and Racha Yai and Racha Noi Islands (35.9%) as the most popular destinations for this sample. This is not surprising because most of the tourists in this sample were Scuba Divers and these three locations are world-renowned dive locations. Kata and Patong beaches on Phuket Island (combined 41.0%) figure highly here as well. Of the respondents questioned about environmental awareness in this sample 75.4% said they had used a tour guide during their activity and 91.6% said the guides “appear to be concerned about the environment”.

The briefing content given by Tour Guides showed that 88.67% respondents confirmed that they were told “Do not touch the coral while scuba diving or snorkeling”, 70.87%

were told “Do not leave trash behind, leave it in the bin” and 55.6% were told “Do not collect or destroy any natural flora or fauna, ‘leave only your footprints’.” 38.2% respondents were told “Do not feed wildlife (e.g. monkeys, fish, etc.)”. 28.5% of the respondents were advised not to stray from tracks and paths, 20.0% were told not to touch structures in caves and 17.8% were asked to not make loud noises in places such as the mangrove forest. A more focused and developed licensing procedure for Tour Operators could be instituted, where obtaining the license includes an “environmental awareness’ training element and defines procedures that a company must guarantee to follow in order to obtain the license.

It was seen that 91.6% respondents received some form of environmental briefing during their activity. This is a good practice and should be developed in the same way as mentioned in the section above Table 4.8.

The responses to “Practices applying in Phuket and surrounding area” were classified into five groups denoting the importance given to each question: Excellent, Good, Average, Poor and Very Poor. This was a complex set of 12 questions that can be broken down into 5 areas of interest: Conservation, Education, Cleaning or littering, Zoning and Overcrowding.

When taken together the seven questions concerning conservation (“Conservation of coral reefs”; “Conservation of the natural flora and fauna (plants and animals)”; “Conservation of the natural environment”; “Conservation of Mangrove forests.”; “Water pollution management.”; “Air pollution management.” and “Noise pollution management.”) produced an “Average” response which is less than would be hoped and more than expected.

The second major area of interest is Education with 2 questions addressing this issue, (“Giving suggestions and warnings for environmentally friendly behavior of tourists.” and “Educating tourists by providing environmental information about the destinations.”). The average satisfaction rating again produced a combined mean of 3.2 (both questions taken together), again placing the respondents in the “Average” classification. The first question addressed issues like briefings from the tour operator crew, producing a 36.3% average satisfaction rating, with a further 39.2% in the “Good” or “Excellent” groups, producing an overall 75.5% rating in what can be described as being within acceptable limits. This indicated that Tour Operator staff often gave briefings at some point during the water-based activity and most respondents indicated they were satisfied enough with the situation. It is suggested that this

issue would benefit from government involvement to ensure the briefings given conform to an acceptable standard.

The next most commented issue of interest was overcrowding (“Limiting the number of tourists visiting a particular tourist attraction.”). This produced a “Low” response. Cleaning or Littering (“Clean garbage areas and waste management.”) and Zoning (“Separating recreational activity areas (Zoning, for example, separating Jet Skiing from Mangrove Forests”). These three issues all feature prominently in the Open End Questions results. When taken together they show an average satisfaction result of 35.43%. The three issues require attention as they are a concern expressed repeatedly in all analyses.

It is noteworthy that the question concerning overcrowding, “Limiting the number of tourists visiting a particular tourist attraction.” scored the lowest satisfaction rating of “Low” on the Likert scale, again implying that this is an issue that would benefit from more careful management. There was a high satisfaction rating for Cleaning and Littering with a total of 62.0% in the “Average”, “Good” and “Excellent groups. Littering was seen as an issue that would benefit from educative campaigns on a national level to engender in locals and visitors alike a continual sense of good litter disposal and a “take care of your country” attitude. Zoning was an issue raised in connection specifically with mangrove forests, coral reefs and the disruption and damage caused to both flora and fauna by Jet Ski activity. The same could be argued for the closure of tourist attractions, sometimes whole areas and islands, to allow time for nature to recover from environmental damage.

The question “How satisfied were you with your water based activity?” produced a mean of 4.0 denoting a “High” or “Fairly Satisfied” level, in other words, 95.1% of respondents were satisfied with their water-based activity experience: this is seen as a very high approval rating, implying as it does, that the Tour Operators provide a good service. Only 4.9% said they were not satisfied.

With regard to “Water-based Activities in Phuket and Surrounding Area”: the four questions and their results fall into two groups. The first two questions are an approval rating, while the last two address issues of good environmental behavior.

The first two questions, “Do you plan to return for more water-based activities in the future?” and, “Will you recommend your friends and relatives to join water-based activities in the

future?” show that the very high response scores of 84.4% and 89.5% confirm that the tourist enjoyed or approved of their water-based activity experience enough to make them want to return and that they would recommend the experience to friends and family.

The third question, “During your trip, did you collect any natural plants or animals?” had a very good response rate of 97.6% saying they did not. This is very encouraging and is an example of what good environmental education and widespread information dissemination can achieve. Unfortunately 2.4% said they had collected “souvenirs” of flora or fauna, ideally this figure should be 0%.

The fourth question, “If possible, did you want to travel outside of the path, track, swimming route, etc.?” showed a response of 35.3% who said they would like to venture off accepted paths and 62.0% who said they would not. Many respondents said they would not because of safety reasons or because they didn't want to cause damage to the environment. These answers indicate an informed and concerned attitude in a high proportion of respondents. Overcrowding was also cited as a reason for wanting to venture off “the path”.

Most tour operators and tourists seemed to behave in an environmentally friendly manner with 75.4% of respondents saying “No” to the question “Did you see any examples of poor environmental management by the Tour Operators during your water-based activities?”. A further 60.2% of respondents said “No” to the question, “Did you see any examples of behavior that makes negative impacts by other tourists during your water-based activities?”

24.6% of respondents had seen some form of poor behavior by the tour operators, this included fish feeding and littering. 39.8% of respondents had noticed other tourists behaving badly, this included littering and damaging the coral. An additional comment was made here about illegal fishing and fishing nets damaging the coral.

Summary of Findings: Qualitative Survey (Open-end Questions 6 to 9).

The Researcher asked if the tourist had seen any bad behaviors by Tour Operators. The most issues concerning the behavior of Tour Operators were, “Tour Operator not following good practices”, “General Littering, Tour Operator”, “Oil Spill” , and “Tourists touching marine flora and fauna” . The environmental issue “Tourists touching marine flora and fauna”

Then next question research asked if the tourist respondents had seen any bad behaviors by other tourists. The most issues concerning the behavior of Tourists were, “Tour

Operator not enforcing good practices”, “Tourists touching marine flora and fauna”, “General Littering, Tourist”, “Poor Diving Training”, “Damaging Coral through contact or bad practice” and “Tourist not following Good Practice”.

Researcher asked tourist respondents for recommendations regarding water-based activities and the environment around Phuket. The most issues were, “Natural Resource Management - Local Government”, “Overcrowding”, “Good environmental practices”, “Regulation”, “Education & Training needed”, “Enforcement” and “Bad environmental practices”. Last question is a very similar question which asked tourists for ideas for improvements for sustainable water-based activity. The most issues were, “Natural Resource Management - Local Government”, “Regulation”, “Good environmental practices”, “Enforcement”, “Overcrowding”, “Education & Training needed”, and “Bad environmental practices”.

Also of note is that two responses appear in the top rankings of all four Open-end Questions: “Natural Resource Management - Local Government” and “Overcrowding”. They also happen to be the two most common issues raised together in the same comment and are highlighted in the Quantitative Survey and the In-Depth Survey (see below).

Summary of Findings: Qualitative In-depth Interview Questions.

The Qualitative in-depth interview conducted with 16 tour companies and divided into two parts, the first part, comprising questions 1, 2 and 9 defined the length of time the Tour Companies had been operating; where they conducted their business; what type of water-based activities they provide and whether their tour guides had approved TAT Guides Licenses and if they were local people.

The second part, questions 3 to 8 and 10 to 13 examined the Tour Companies awareness, participation, activities and training in environmental practices and their opinions regarding what they saw as the most damaging behaviors. It also included recommendations for good environmental behaviors.

All companies claimed to be aware of environmental impacts caused by their operations, although 11 were unable to give any examples of impacts. The examples that were given mainly concerned boat engine-oil leakage, anchoring and placement and availability of buoys and untreated sewage entering the sea.

It is clear from the data that all Tour Operators were aware of the impacts of their companies' operations. A large proportion of them understood the basics of good environmental practices. Some comments reported some sort of litter clearing operations, involving staff or staff and tourists as their main activity "for preserving the natural environment", however, 7 responses reported no specific activity. 4 out of 27 responses also complained about poor mooring and anchoring facilities.

When asked to share case studies of best environmental practices 6 out of 23 responses again mentioned littering, however, 8 out of 23 responses answered by giving general diving advice, such as "Do not step on or touch the coral." and "Do not use diver's gloves.". Only 2 responses mentioned that they have "best practice" advice on their website and social media, with one of those companies actively urging others to do the same (including suggesting a monthly award of a "good practice" Certificate).

When asked about training in their companies 6 out of 16 responses indicated that their staff "already know about good practices". 6 out of 10 responses commented that some form of staff training is provided, with 2 out of the 16 companies saying they provide no training at all. With regard to awareness training for Tourists, 9 out of 16 companies said they do "Brief tourists before or during tour activities about good behavior". One company commented that they "tell Tourists to feed fish with fruit, not bread", which is a bad environmental practice, although the respondent believed it was a good practice. Another respondent said they tell tourists not to step on or damage coral. Only one company said they do not brief tourists at all.

The researcher asked the Tour Operators if they had ever seen one of the TAT Guide books, all 16 companies had not seen any of the Guide books. One company had seen a National Park guide book. There is an obvious need for better distribution of the different TAT guide books.

The most "environmentally caring" nationalities were Europeans, Scandinavians, tourists from the Americas and Japanese. This may reflect a higher environmental awareness than in other groups because of more media coverage about good behaviors in those areas. The worst offenders were the Chinese, Russians and Asians (not including Japan), indicating a need for more environmental awareness information to be presented to these tourists.

The most damaging activities according to the respondents were the “Seawalker” with 6 out of 16 companies, followed by commercial net fishing and snorkeling with 4 companies. 4 out of 16 companies mentioned problems with big boats or commercial fishing boats. Anchoring on coral was mentioned by 4 companies while fish feeding is mentioned by 2 companies. Untreated sewage was also mentioned by 2 companies while only 1 company each commented that Littering and Scuba diving caused most damage.

6 of the companies asked did not have “any dealings with any organization or club that helps to minimize impacts on the natural environment”, however, 2 companies had dealings with the Phuket Marina authority, “Green Fin” and “Go Eco Phuket”. One company each had dealings with some form of organization, such as “Go Eco Phuket” and “Project Aware”. Only one company said they had dealings with TAT.

Out of 38 responses to the question “Do you have any recommendations to improve water-base activities or the protection, reduction or minimizing of negative impacts on the natural environment? 15 comments called upon local authorities to rectify environmental problems ranging from “Enforce a system of fines and Inform and warn tourists that they will be fined for bad behavior” to “Prevention & enforcement of fishing in prohibited areas (especially night fishing and during the breeding season)”. A further 6 responses out of 38 called for more and better installed mooring buoys and 3 companies called for better local investment. Two responses mentioned untreated sewage entering the sea from shore-based hotels and businesses. Two responses also called for more cooperation between Tour Operating companies.

5.2. Discussion

The responses considered appropriate for the additional overlay analysis were the responses to questions 3 – 8 and 12 – 13 from the Qualitative In-Depth Survey and questions 6 to 9 of the Open-End Questions Survey. The total populations quoted in this survey will seem much higher than expected. This because a single response may cover several classifications. For example, the response from the In-Depth Questionnaire, “Try to limit the amount of people, educate locals of the safe/ sustainable fishing and [proper] waste disposal.” Is classified into four issues: Overcrowding, Natural Resource Management - Local Government, Education & Training needed, and Good environmental practices. Using this methodology produced a total population

for both surveys of 1,047 response issues: 265 in the In-Depth Survey and 782 in the Open-End Survey (questions 6 & 7 had 335 and questions 8 & 9 had 447).

The most frequent issues, were “Natural Resource Management – Local Government” has a total of 149 response issues with 32 out of 265 responses in the In-depth Survey and 117 out of 782 responses in the Open-End Survey. “Good Environmental Practices” has a total of 116 response issues with 42 out of 265 responses in the In-depth Survey and 74 out of 782 responses in the Open-End Survey. “Regulation” has a total of 87 response issues with 22 out of 265 responses in the In-depth Survey and 65 out of 782 responses in the Open-End Survey. “Overcrowding” has a total of 82 response issues with 18 out of 265 responses in the In-depth Survey and 64 out of 782 responses in the Open-End Survey. “Education & Training needed” has a total of 71 response issues with 12 out of 265 responses in the In-depth Survey and 59 out of 782 responses in the Open-End Survey. “Enforcement” has a total of 52 response issues with 11 out of 265 responses in the In-depth Survey and 41 out of 782 responses in the Open-End Survey.

“Natural Resource Management - Local Government” is of primary importance which reflects the very common call for more involvement by local government in a wide variety of issues. Tour Providers want to follow good environmental practices and would like more assistance from local government (as well as organizations like “Green Fin” and “Go Eco Phuket”). Almost half of these responses called upon local government to help care and conserve coral reefs (including creating artificial reefs), control commercial fishing, plant new mangrove areas, regulate Tour Operator’s operations, provide more trash bins and have educational campaigns to inform and educate people, both tourists and Tour Operators. In addition the respondents directly connected local government with controlling tourist numbers visiting particular locations; littering and providing a sufficient number of trash bins; reducing plastic waste and assistance with providing a sufficient quantity of properly placed mooring buoys.

It is very clear that there is a strong wish, especially among Tour Operators, for more government involvement in all aspects of water-based tourism.

“Good Environmental Practices” also covers a wide range of activities. These can be broadly separated into three groups:

a) Actions by individuals (tour operators or tourists) regarded as helping to sustain a healthy natural environment, such as clearing up litter or not touching the coral. There

were many responses that describe good environmental behaviors by individuals enjoying or providing different water-based activities, but little or no structured control and management.

b) Actions by Tour Operators, such as briefings before a water-based activity (“Do not feed the fish”); tour operator training; specialist diving briefings (“do not use divers gloves or pointing sticks”) or organizing litter clean-up operations with either staff or both staff and tourists.

c) Actions taken by local government, such as licensing Tour Operators; correctly installing mooring buoys and publishing and distributing educative information, such as the TAT Guide books.

There is clearly a need for more education and training of both tourists and Tour Operators. A more structured approach to briefing and informing tourists is required and information needs to be tailored to suit the particular type of water-based activity.

“Regulation (requiring National and/or International cooperation)” reflects a strong desire for more government regulation. Of particular note is the regulation of commercial fishing boats which cause widespread damage to coral reefs. If the responses concerning commercial are grouped together (issues 1 Regulation, 2 Enforcement, 6 Ban Light Fishing, 7 Ban\better control commercial fishing, 21 Commercial fishing in areas not allowed) this produces a total response frequency of 150.

There are also calls for governmental authorities to regulate the diving companies more effectively; regulate the construction of more hotels; ban the use of 2 stroke engines (or reduce the import tax on the cleaner 4-stroke engines to make them more affordable). In addition, there are comments to “Preserve the national park (Similans) and don't fish there.” and “[be] stricter about rules and regulations. Punishment to the person who breaks the rules and help to protect the environment.” These responses reflect a desire, particularly on the part of the Tour Operators, to see stricter regulation and enforcement of existing regulations. This also covers such issues as controlling Jet Ski and speedboat operators; banning fishing in protected areas; banning light and shark finning/fishing and regulating and preventing over fishing. There is a clear call for the government to be more proactive about managing the marine environment more sustainably.

“Overcrowding” reflects the comments seeking direct help from local government to control the number of tourists visiting popular sites, most of the comments concern controlling

the number of tourists and Tour Operators at dive sites. There is a very frequent and clear call from the Tour Operators and tourists to limit the number of visitors to popular locations. There are a total of 12 responses calling for some dive sites to be closed because of overcrowding.

“Education & Training needed” also covers a very wide range of activities that fall into two types, training for Tour Operators (and their employees) and educating and informing tourists.

There is a need for Tour Operators to have more formal training and at least to have read the relevant TAT Guide book. Very few Tour Operators have a company training course for their employees or have any ongoing training regime. This is a good example of another issue requiring local government action: the training and licensing of Tour Operators is inadequate and not promoted or enforced. Tour Guides need to be taught sustainable environmental practices but also require specialist training specific to the water-based activity they will be pursuing: sustainable environmental practices are very different for a tourist touring a mangrove forest than for a Jet Ski rider or scuba-diver. There is, however, a repeated willingness to learn expressed by the Tour Operators, this willingness should be exploited.

Briefings by Tour Operators are often given before a water-based activity, but again there is no formal structure to the training and it is left up to the Tour Provider to decide if briefings are given. Many comments by tourists and Tour Operators concern briefings, either the lack of them, the poor quality of them (there is one report of a well presented and useful briefing): the frequency of these comments shows the importance of the subject in stakeholder’s minds. Briefings are seen as a very effective way to prevent damage to the environment by tourists, particularly as the briefing usually occurs just before the activity is started so the ideas are fresh in the minds of the participants.

The above details the five areas of concern as ranked by the number of response issues made. There are, however, other issues regarded as important that attracted fewer comments but which are nevertheless of importance.

There are four sub-classifications for littering. If these are grouped together they produce a total of 104 response issues with 31 out of 265 responses in the In-depth Survey and 73 out of 782 responses in the Open-End Survey. Littering, by both tourists and Tour Operators, is

another area where local government can help by providing enough trash bins and collecting trash cleanly and regularly.

Anchoring was also seen as a major problem with not enough mooring buoys, buoys incorrectly installed or installed too close to each other or too close to coral reefs or in shallow water. The anchoring issue produces only a total of 28 response issues with 20 in the In-depth Survey and 8 in the Open-End Survey. It is given emphasis here because of the magnitude a single event can cause: one poorly dropped anchor can destroy a whole section of coral reef. This issue is closely related both to the responses calling for a limit to the number of tourists and Tour Operators on some dive sites, as well as the calls to close some sites completely to allow them to recover naturally because of significant damage already sustained.

Oil spills or bad oil-changing practices are also seen as a source of damage to the environment from dive-boats, speedboats and other tour boats, as well as commercial fishing boats.

Again, the respondents in all these issues frequently connect these sustainability issues with local and national government failure to take effective action.

The three Research Questions posed by this study were, firstly, "How have water-based tourism activities impacted the environment?", secondly, "What measures are needed to improve environmental awareness among stakeholders?" and lastly, "How can stakeholders adapt their operations and behavior to ensure effective environmental management which protects the natural environment resources and removes, reduces or minimizes negative impacts?"

To answer the first question, this research has proved that water-based touristic activities do have negative impacts on the environment. Coral reef damage by divers and snorkelers touching the coral or collecting souvenirs, tour boats anchoring on coral; hotels and business which support the tourists, discharge untreated sewage directly into the sea; engine noise can disrupt nesting and feeding patterns in wildlife, as can fish feeding. To assess in detail the damage caused is beyond the scope of this study but does warrant further study.

To answer the second question, there were a range of measures suggested by the respondents to improve awareness among stakeholders. Media campaigns, better distribution of the TAT Guide books, better training and education for Tour Operators and more information about what are good and what are bad environmental practices. This appears to be particularly

important for the Chinese and Russian tourists. Other suggestions included using social-media, more and better tour briefings, more local government involvement in education and information distribution, more and better cooperation between Tour Operators, stricter licensing and enforcement of existing regulations.

The third Research Question was “How can stakeholders adapt their operations and behavior to ensure effective environmental management which protects the natural environment resources and removes, reduces or minimizes negative impacts?”

This study has revealed many ways in which effective and sustainable environmental management can be improved.

5.3. Recommendations

The three research objectives are “to study water-based tourism activities”, “examine the environmental knowledge and awareness of tourists and tour operators”, and finally, “to propose effective measures for the protection of the natural environment and for minimizing of negative impacts on the natural environment.”

The first and second research objectives of this study have been clearly stated in earlier chapters. What follows are the researcher’s recommendations to achieve the third objective.

In order to successfully propose measures to ensure the sustainability of the natural environment and to minimize the impacts of water-based touristic activities the active participation of stakeholders is required. There is also an essential degree of cooperation and a sharing of responsibilities that is required between these groups in order to achieve this objective. These recommendations have therefore been organized into sections that address the particular stakeholders who must become involved to successfully implement the recommendations. The stakeholders are, a) local and national government organizations, b) the local Thai populations (fishermen), c) the tour operators, and finally, d) the tourists themselves. It must also be further noted that the involvement of local or national government is required in all of the following recommendations.

Recommendations for All Four Groups of Stakeholders.

Education and Environmental Awareness: well researched and relevant information about how to sustain a healthy environment and effective environmental practices should be promoted on Thai media, such as radio and television and taught as part of the school curriculum. Promoting awareness among the general populace is seen as a very efficient way to improve the overall sustainability of the natural environment and conserve one of Thailand's most valuable resources.

The TAT licensing procedure can be used to ensure tour guides follow effective practices that are relevant to the types of tours which they conduct. In addition training can be given on how their different touristic activities adversely impact the natural environment.

Legislation and regulation of the TAT licensing procedure is seen as a powerful way to improve awareness and prevent damaging impacts on the environment. No tour operator should be allowed to operate without their employees having a TAT Guide License. During the licensing process these employees would have to pass training in good practices and be thoroughly familiar with all recommendations in the existing guide books. Included in this training would be advice on how to give effective pre-tour briefings specifically relevant to the different tours provided: scuba-diving, snorkeling, jet skiing, etc.

This requires a more organized and structured approach than now exists and this study recommends further study in the area of licensing for tour operators.

Littering: this is an endemic problem and causes not only an unsightly environment but also directly damages flora and fauna, from beer bottles cast into the ocean and mangrove forest, to cigarette butts that are discarded and can kill wildlife. Local government needs to ensure that there is a sufficient quantity of trash cans in all areas that are visited by tourists. They also need to ensure that these trash can are emptied and cleaned regularly.

In addition, an educative campaign should be conducted using different media, from television, to printed leaflets and targeted at local populations, tour operators and tourists. For example, more signs should be placed in strategic locations such as harbors, where tour boats operate, warning and explaining to everyone the negative impacts that littering has on the environment. Leaflets should be placed in hotel rooms, bar and restaurants and advice given to tourists during pre-tour briefings. A national "Keep Thailand Tidy" campaign can be conducted on the Thai Public Broadcasting Channel to raise awareness and promote all stakeholders to not

only be more careful with their trash, but to actively stop tourists from discarding litter into the natural environment. As was shown by this study, this is particularly applicable to Chinese, Russian and Asian (although not Japanese) tourists. Leaflets giving advice written in these languages is strongly recommended.

Local government can also become more involved in promoting and organizing litter clean-up operations that involve local people, tour operators and tourists. Many tourists, particularly those from Scandinavia, Europe, the USA, Japan, Australia and New Zealand already have a “keep your environment tidy” awareness from campaigns conducted in their own countries. This awareness can be exploited to help keep Thailand free from litter.

Recommendations for Government, Local Populations and Tour Operators:

Closure of Dive Sites: This study recommends the closure of some dive sites, although further study is required to decide which sites are in a critical condition and which require closure and for how long. Such a study would benefit from the knowledge and experience of both the local population as well as the tour operators.

Regulation of Commercial Fishing Operations and Enforcement of Existing Regulations: This is one of the most critically important subjects because of the severe and extensive damage that is caused by illegal fishing activities. This study recommends the banning of light fishing and shark finning because of the way these techniques deplete fish stocks. Fishing during breeding seasons should also be banned. Commercial net fishing over coral reefs should be banned because of nets becoming entangled on the reefs and killing large areas of the coral. This is not only damaging to the environment but is also an expensive loss to the fishermen. In order to enforce this ban the government would require the assistance of the navy or coast guard to patrol these areas both by day and by night. Suitable deterrent punishments and fines would need to be established, again an area for further study. Tour operators should be encouraged to report violations and those reports should be acted upon and people found guilty of illegal fishing should be severely punished.

Mooring Buoys: There is an obvious need for more and better mooring facilities. More buoys are required that need to be properly placed not in deep water and far enough apart so that boats can safely moor during tidal movement and strong winds. Again, the knowledge of local populations and the tour operators would assist the authorities in proper placement. The

buoys also need to be installed in locations where their installation does not cause environment damage.

Untreated Sewage Discharged into the Sea: The researcher recommends further study about this highly damaging activity. Hotels and shore based companies discharge untreated sewage into the sea. It is unknown if there is existing legislation to prevent this activity, but monitoring and enforcement is required.

Creation of Coral Reefs and Planting of New Mangrove Forests: there is a requirement to try and correct for damage already sustained by the marine environment. This is another area where further study is required and again the knowledge of the local people and the tour operators would be useful. This study recommends that new coral reefs and mangrove forests be created in damaged and depleted areas and that these areas are closed to touristic activities until they have established themselves.

Recommendations for Government and Tour Operators:

Overcrowding at Tourist Locations: Overcrowding was a problem highlighted again and again in this study. Regulation and enforcement is required because overcrowding causes increased damage to the environment with more litter, noise and disturbance and increased chance of damaging environmental behaviors. Large groups are harder to control and overloaded boats are also a safety hazard and a threat to the well-being of the tourists. It is hard to make a recommendation for controlling overcrowding and further study is required. It is unlikely that promoting self-regulation among the tour operators will produce the desired effect.

More Structured Pre-Tour Briefings: Tour operator pre-tour briefings are seen as an effective way of promoting beneficial environmental behaviors among tourists. As this study has shown, however, there was a lack of structure and organization to the briefings given. This study therefore recommends that TAT become involved and design effective briefings relevant to the activity. Briefing should follow a standard format that ensures essential beneficial behaviors are taught to the tourists just before they begin their tour.

Regular Training of Tour Guides: As mentioned before tour guides should be made to undergo a TAT approved training program in order to gain their license and should not be allowed to operate without this license. In addition this study recommends annual refresher training courses to ensure not only that tour guides are fully aware of their responsibilities, but

also so that their training can adapt to new legislation and beneficial practices as these are developed.

“Seawalker” Paths Through Coral Reefs: This study strongly recommends that tour companies operating “Seawalker” tours should be forbidden to make new “paths” through the coral. The “Seawalker” tours should follow only TAT approved and created paths.

Greater Cooperation between Tour Operators and Environmentally Beneficial Organizations: there should be greater cooperation between organizations such as “Go Eco Phuket” and “Green Fin”. This should take the form of regular meetings and further study should be conducted to build these organizations into the TAT licensing procedure to benefit from their research.

Zoning: This applies in particular to Jet Ski operators. This study recommends that Jet Ski operations take place away from coral reefs, mangrove forests and popular beaches. There should be further study in the Phuket area to establish safe areas for Jet Ski operations.

Licensing and Maintenance of Tour Boats: This study recommends the government licenses boats used to take tourists on tours. Whether they are water-skiing boats, sunset cruise sailing boats or scuba-diving boats they should have to pass annual maintenance checks to ensure proper functioning, that there are no oil leaks and all relevant safety equipment is in place.

Training of Tour Boat Crews: Boat crews should also be trained in beneficial environment procedures. Even though they may not work as guides, they should be trained to understand environmental issues and to observe other people's (tourists and tour operators) behaviors and be empowered to stop any behaviors they see that could have negative effects on the environment.

Inexperienced or Poorly Trained Divers: some scuba divers that go diving in Phuket and the surrounding areas may never have dived before and have only just completed a one day diving school. Some of the dive sites around Phuket have strong currents and it may be difficult for an experienced diver to control their buoyancy correctly to avoid touching and possibly killing the coral. Some inexperienced divers dive with cameras and have similar control problems. This study recommends that inexperienced divers be banned from some dive sites and restricted to safer sites when they cannot do so much damage. More study is needed to define which dive-sites require this additional protection from the inexperienced divers.

As can be seen from the above recommendations there are many subjects that will benefit from further study. The researcher hope that this study will prompt an interest in preserving the amazing resource that is the marine environment around all of Thailand's coastline.

5.4. Limitation

The key limitation of this study was the small sample size of the Qualitative surveys, however, much useful information was obtained despite this. Most of the questionnaires tourist respondents were scuba diving and snorkeling participants, which may have skewed the data, but the Overlay Analysis to some extent corrects for this bias. The specific water-based activities in each specific area should be focused in future research. However, this exploration study shows stakeholder points of view of environmental awareness and shows a satisfaction among tourists that can be useful for improved development of marine, water-based touristic activities.

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Appendix A

Table 1 Organizations Focused on Minimizing and Controlling Personal Motorized Water Sports

Organization	Focus on Issue Related to Personal Motorized Watercraft (PMW)
Australian Marine Conservation Society	Marine Conservation in Australia
Bluewater Network	Minimizing jet ski use in nature areas
British Columbia Marine Awareness Society	Awareness of marine issues and related motorized watercraft issue
Center for Marine Conservation	Marine conservation
Fly Rod and Reel	Minimizing PMW near fishing areas
Health Watcher	Safety of PMW
National Parks and Conservation Association	Conservation of natural parks
Natural Trails and Waters Coalition	Various, land, snow and water impacts
Ontario Environment Network	Focus on environment issue in Ontario
Swan River Trust	Control of PMW usage in Swan River, Perth, Australia
Port Hacking Protection Society	Control of PMW usage in Port Hacking, New South Wales, Australia
Black Hills Audubon Society	Concerned with effects of PMW on bird life
Noise Pollution Clearinghouse	Various forms of noise issues and their impact on human disturbance

Source: Richins, 2007

Table 2 Organizations Focused on Advocating and Promoting Personal Motorized Water Sports

Organization	Focus on Issues Related to Personal Motorized Watercraft (PMW)
American Water Ski Association	Promotion and development of water ski sports
Americans for Responsible Recreational Access	Advocating use of public lands and waterways for recreational use
British Water Ski Association	Promotion and development of water ski sports
I.R. Iran Canoe/Kayak and Water Ski Federation	Multiple water sports development and promotion
International Jet Sports Boating Association	Promotion and development of waterskiing, internationally
International Water Ski Federation	Promotion and development of jet sports, internationally
Personal Watercraft Industry Association	Advocating the free use of PMW
Singapore Water Ski and Wakeboard Federation	Promotion and development of waterskiing and wakeboarding
Turkish Underwater Sports, Life-Saving, Water Ski and Fin Swimming Federation	Multiple water sports development and promotion
Australian Water Ski Federation	Promotion and development of water ski sports
International Council of Marine Industry Associations	Development and advocacy of various water sports associations

Source: Richins, 2007

Table 3 Examples of One-Day Boat Tours

Type	Place and Example	Activities	Special Features	Operator Website
Coastal setting as a backdrop for relaxation and escape	U.S. Virgin Islands tour from St. Croix to Buck Island and Turtle Beach	Sailing Snorkeling Beach walks Beach barbeque	Glass-bottom sailing boat	Big Beard's Adventure tours www.bigbeards.com/sailing.htm#full
Adventure activity – kayaking	North Carolina tour around Masonboro Island	Kayak tour Guided interpretive walks Swimming Picnic lunch	Rare, undeveloped barrier island	Kayak Carolina www.kayak-carolina.com/masonboro-islandt.html
Adventure activity – diving	Michigan Shipwreck diving tour in Lake Superior	Diving on several shipwrecks Views of lake shore forests	Access to the shipwrecks and underwater rock formations	Shipwreck Tours www.shipwreck-tours.com
Adventure activity – fishing	Zanzibar, Africa	Fish with a local on a traditional boat	Experience of traditional fishing culture	Eco & Culture Tours Zanzibar www.ecoculture-zanzibar.org/HTML/e_daytours.htm
Wildlife viewing	Sisimiut, Greenland	Whale-watching Seals Visits to abandoned settlements	Wildlife Unique culture	Inuit Outfitting www.greenland-guide.gl/sisimiut/tour-boat.htm
Access to a special place – historical significance	Lefkas, Greece	Historical sites Local villages, islands	Replica Greek war galleon	Odysseus www.lefkas.net/odysseus.htm
Access to a special place – indigenous/ethnic communities	Vietnam Namtha River	Traditional villages Rapids Bird watching	Access to several ethnic groups	Nam Ha Guides www.theboat-landing.laopdr.com/dayboat.html

Table 3 Continued

Type	Place and Example	Activities	Special Features	Operator Website
Access to special places – coral reefs	Puerto Vallarta Mexico	Snorkeling Diving Islands Beaches	Marine wildlife Coral formations	Inside Vallarta Travel www.hpermex.com/html/pv_act2.html
Access to special places – island scenery	Skagafjordur, Iceland	Islands Seabirds Marine wildlife	Historical interpretation	Nonni Travel www.nonnitravel.is/Iceland/N17-Boat_tour.htm
Access to special places – coastal scenery	Chesapeake Bay, USA	Tour around bay Museums Restaurants Shops Historic homes	Access to local arts studio	Watermark Cruises www.watermarkcruises.com/tours_excursions.html
Access to special places – glaciers	Seward, Alaska	Glaciers Marine wildlife	Icebergs Limited numbers	Bear Glacier Tours Seward.net/kayakcamp/

Source: Moscardo, 2007

Table 4 Negative Environmental Consequences of Tourism

Issue	Problems	Examples
<p>Resource usage: Tourism competes with other forms of development and human activity and human resources especially land and water. The use of natural resources subsequently leads to the transformation of ecological habitats and loss of flora and fauna</p>	<p>Indigenous and local can be denied access to natural resources upon which they base their existence and livelihoods. Land transformation for tourism development can directly destroy ecological habitat. The use of resources for tourism involves an 'opportunity cost' as they are denied to other sectors of economic development</p>	<ul style="list-style-type: none"> • Airport construction in tourism generating and destination areas such as London and Malta uses large areas of farmland • Draining of coastal wetlands in Kenya for hotel developments • Loss of beach and coral reef ecosystems in the Caribbean • Deforestation of mountainsides associated with tourism in the European Alps and Himalayas • Lowering of the water table below the level of local wells as in Goa, India • Induced change to ecological habitats and a subsequent reduction in the number of species of flora and fauna as in Scotland and European Alps • Exclusion of indigenous people from their land, such as the Maasai people from the Maasai Mari nature reserve in Kenya

Table 4 Continued

Issue	Problems	Examples
Human behavior towards the destination environment	Local people encourage by the revenues to be gained from tourism and tourists may display ignorance and/or a disregard for the environment and indulge in inappropriate behavior. This can lead to a range of negative consequences for the physical and cultural environments	<ul style="list-style-type: none"> • Disruption to eating and breeding patterns of wildlife animal in Maasai, Kenya • Local people breaking off coral to sell tourists off the Mombassa coast • Dynamiting of fish in the Amazon to provide entertainment for tourists • Tourists walking over coral in the Caribbean • Increased crime, prostitution and drug taking in many destinations • Offence caused in Muslim cultures by western tourists wearing inappropriate dress to visit mosques and other cultural sites
Pollution <ul style="list-style-type: none"> • Water • Noise • Air • Aesthetic pollution 	A range of different types of pollution can result from tourism. These can impact on different spatial scales from local to global. In destinations the effects of pollution are often associated with the level of tourism development and the degree of planning of implementation and environmental management controls	<ul style="list-style-type: none"> • Problems of human waste disposal generated by tourism in the Mediterranean and the Caribbean • Air pollution problems in the Europe Alps and the contribution of jet engine emissions to global warming and ozone problems • Noise pollution of air balloons in the Serengeti Park in Africa • Many coastal areas such as in the parts of the Mediterranean and the Caribbean have had their coastlines transformed by standardized construction of tourist accommodation and are indistinguishable from each other

Source: Holden, 2000

Table 5 Overview of Various Environmental Impacts of Water-Based Experiences

Water-Based Experiences	Positive Environmental Impacts	Negative Environmental Impacts
Sailing	Development of knowledge of sustainable principles Education for sustainability – “leave only footprints” ethos	Anchor damage to “floor/bed” of the water setting Coral damage Marina construction and other water-based infrastructure developments changing ecosystem patterns and systems Waste pollution Marine animal hits
Motorboating	Development of knowledge of sustainable principles Education for sustainability Also comment for Motorized water sports	Anchor damage to “floor/deck” of water-based infrastructure developments changing ecosystem patterns and systems Waste pollution Marine animal hits Also comments for Motorized water sports
Motorized water sports	Development of regulations and management practices to ameliorate negative environmental impacts	Physical stress on aquatic organisms Biological effects of pollutants Negative impacts on physical environment
Surfing and windsurfing	Water quality advocacy Politicizing environmental issue	Minimal damage; debris from broken boards, foot straps, broken masts, litter from equipment failure Maybe environmental disturbance related to difficult site access point from land entry – trampling of vegetation, habitat disturbance, possible littering
Sport fishing and big game fishing	Alleged low impact because of tag-and-release program or tagging	Technology used to participant can cause impacts, for example, pollution Marina, jetty, wharf developments impact on natural ecosystems Waste discharge Anchor practices may cause damage Litter

Table 5 Continued

Water-Based Experiences	Positive Environmental Impacts	Negative Environmental Impacts
Scuba diving, snorkeling and free diving	Training and education practices Codes of conduct Increased preservation values over extractive use	Damage resulting from infrastructure developments, marina, jetties, pontoons Slow-moving water, buildup of pollutants Propeller action on animals and vegetation Stress on animals Fin and tank damage Anchor practices damage Holding and standing on coral Stirring up sediment
Whitewater rafting	Appreciation of environmental values	Management of campsites – campfires, human waste, rubbish, damage to soils and vegetation, trail building, destruction of prehistoric sites
Kayaking	Less intrusive activity than a number of other water based experiences Nonpolluting activity in itself	Concerns regarding access issues and water quality issues
One-day boating adventures	Same as Motorized water sports, Surfing and windsurfing and White water rafting	Same comments for Motorized water sports, surfing and windsurfing, whitewater rafting
Sail training adventures	Sail training adventures try to minimize environmental impacts due to practices in places during refueling engines and waste water storage	Marina construction and other water-based infrastructure developments changing ecosystem patterns and systems Waste pollution

Sources: Jennings, 2007

Table 6 Techniques for Managing Marine Tourism

Physical Technique	Description	Examples	Purpose	Implication
Site hardening	Increasing the durability of the resource	Boardwalks, concrete launching ramps, mooring buoys	To reduce negative environmental impacts, which result from intensive, use (e.g. erosion)	Escalates development of site
Facility placement	Geographical location of facilities to 'channel' use to desired areas	Siting of boat ramps, marinas and moorings away from sensitive areas	To discourage use in sensitive/inappropriate areas	Concentrates use in specific areas
Facility design	Designing items to be safer, more durable or less harmful	Replacing children's old, wooden beach-play equipment with modern, plastic, purpose-designed equipment	To meet recreation needs better, improve safety and reduce vandalism/deterioration	Usually more costly for recreation organization initially – maintenance cost lower
Sacrifice areas	Allocating specific areas for intensive use in order that other sites remain pristine	Using above techniques to encourage majority of users to specific beach, hereby reducing pressure on other nearby beaches	To 'sacrifice' a specific site by concentrating use so that other areas have lower levels of use	Rapid deterioration of sacrifice site Common spill-over to neighbouring sites Increased possibility of conflicts between users
Remove/alter attraction	Reduction the motivation for people to visit a particular site by changing the attraction	Moving 'Christ of the Deep' statue from local reef to sand bottom in Pennekamp Marine Park, Florida	To decrease high-density use of specific sites	Public outcry removal of attraction; potential harm to attraction
Rehabilitation	Actively renovating an area to improve its quality and mitigate deterioration	Re-vegetation /planting programmes; reintroduction of endangered species	To improve quality of resource	Active programme needed Site often can not be used during rehabilitation

Table 6 continued

Physical Technique	Description	Examples	Purpose	Implication
Regulatory Limit visitor numbers	Setting maximum levels for a site and close it to additional use after the limit has been reached	All mooring sites having to be booked in advance – once they are booked no more are permitted	To control impacts by restricting numbers of people	Does not cater for demand Casual users tend to miss out
Prohibit certain activities/use	Banning activities which maybe harmful or unsafe or impact detrimentally on others	Banning use of all motorized water craft within 100 m of shore	To reduce conflict/harm	Resentment from groups which are banned Enforcement needed
Close areas to activities/use	Closing a specific area for all use or for certain uses for a specified time	Fencing off a dune area for six months to allow vegetation to regenerate	To allow areas to recover Reduce impacts from certain activities	Enforcement needed Displaces harmful use to other locations
Separate activities	Geographically or temporarily separating activities	Zoning areas for specific kinds of use; allowing swimming on certain days, windsurfing on others	To separate incompatible uses	Education and enforcement needed Reduces freedom of choice
Require minimum skill level	Restricting use of an area to people with a certain training/certification skill level	Visitors having to be certified in water safety/survival Visitors having to hold scuba certification or CPR/First Aid	To ensure skills match challenges To reduce negative impacts	Appropriate training courses must be available

Table 6 Continued

Physical Technique	Description	Examples	Purpose	Implication
Economic Differential fees	Charging higher fees for certain groups, activities, times or locations	A discounted boat-ramp fee for off-peak use	To spread use To ensure costs of managing certain activities are paid for by participants	'User pays' philosophy not widely accepted in some countries Reduce access for lower socio-economic groups
Damage bond	Requiring a damage deposit which is refunded to user if site is left in desired state	A \$100 beach-use deposit which is refunded to the user only if inspection reveals site is left in suitable state	To provide a financial incentive for good behaviour To provide money for cleaning/rehabilitation if needed	Financial system and inspection service required
Fines	Imposing financial penalty for inappropriate/damaging behaviour	A fine for littering, vandalism or another regulation transgression	To penalize harmful acts	Enforcement needed Legislative backing needed
Rewards	Offering a financial reward for reporting inappropriate behaviour or undertaking desired behaviour	A prize for the greatest amount of litter collected by a group during a week A reward for reporting vandalism	To assist with enforcement of regulations An incentive for good behaviour	Finance needed

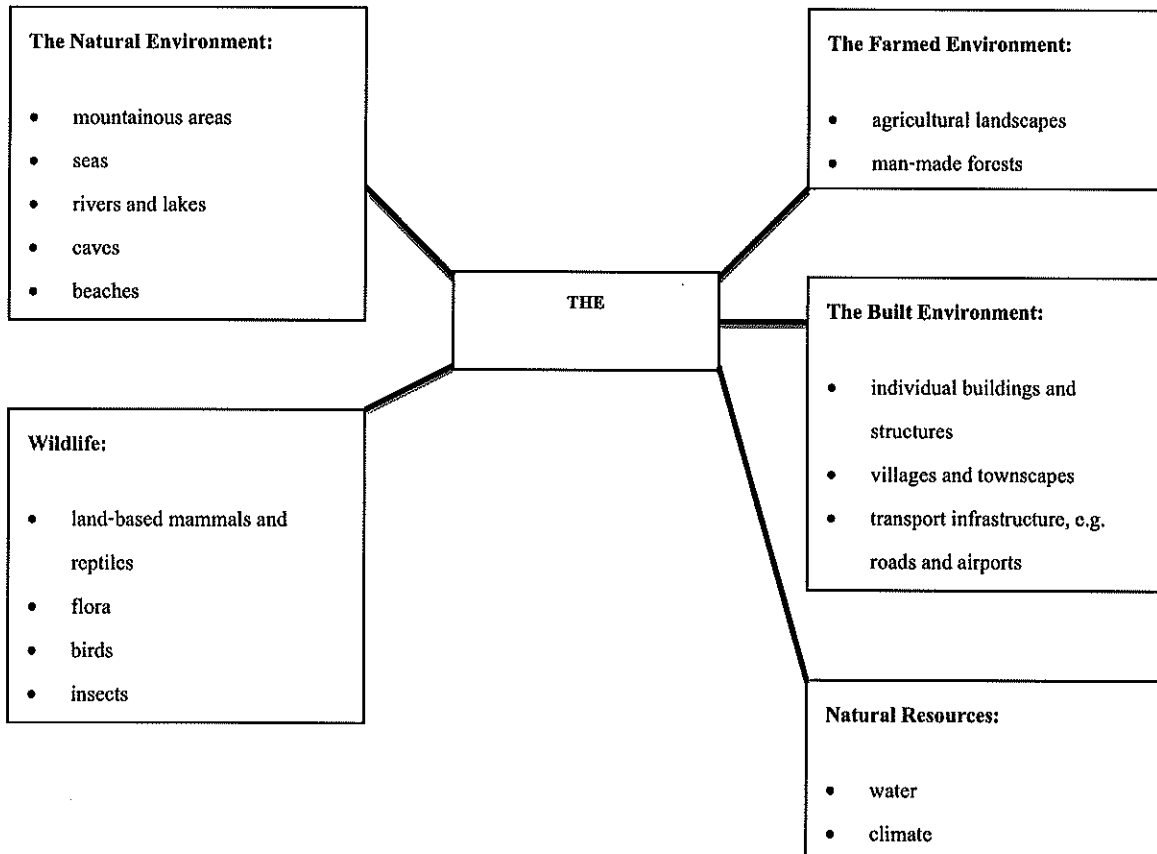
Table 6 Continued

Physical Technique	Description	Examples	Purpose	Implication
Education Print material	Distributing printed material to visitors which describes/encourages appropriate behaviour	Brochures handed to all visitors which prompt them to take rubbish home	To encourage appropriate behaviour to reduce visitor impacts/conflicts	Need access to visitors before and during visit
Low-power radio	Broadcasting important information to visitors via AM radio band	Messages about weather, pollution or recent problem in area	To encourage appropriate behaviour to reduce visitor impacts/conflict	Need access to visitors before and during visit
Signs	Displaying printed messages in appropriate locations	'Dunes being rehabilitated – please stay on track'	To encourage appropriate behaviour to reduce visitor impacts/conflict	Important that wording is positive and sign does not detract from experience
Visitor centres	Structure which forms focal point for area's education efforts	Marine Park Visitor Centre	To encourage appropriate behaviour to reduce visitor impacts/conflict	Major financial cost
Guided walks/talks	Formal communication programme from staff to visitors	Guided walk to seal colony	To encourage appropriate behaviour to reduce visitor impacts/conflict	High quality of person's teaching skills imperative
Activities	Any activity designed to entertain and educate	Instruction in surf life-saving techniques	To encourage appropriate behaviour to reduce visitor impacts/conflict	High quality of person's teaching skills imperative
Personal contact	General contact and communication between staff and visitors	Answering questions about the best beaches/reefs to visitors	To encourage appropriate behaviour to reduce visitor impacts/conflict	Availability to staff critical

Source: Orams, 2000

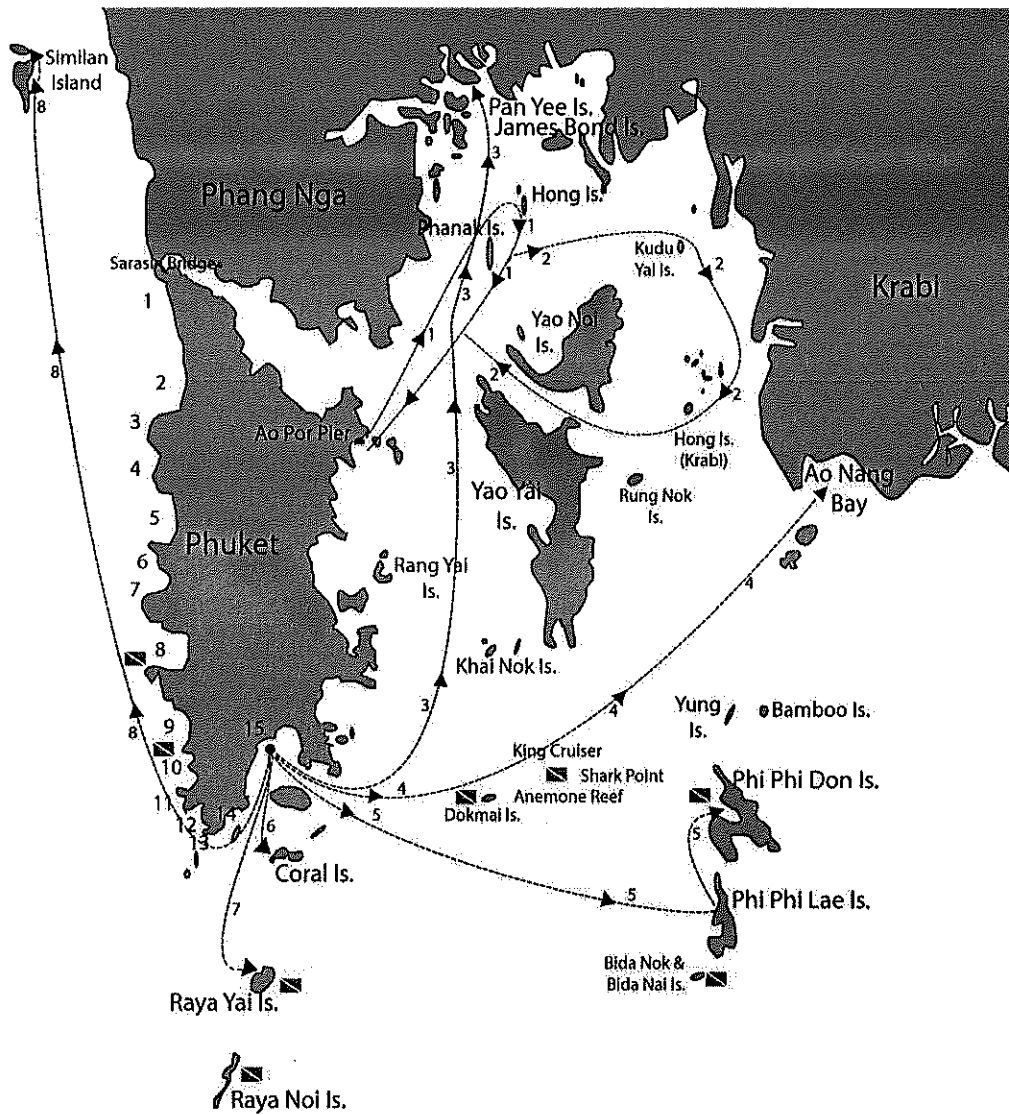
Appendix B

Figure 1 Scope of the concept of the environment



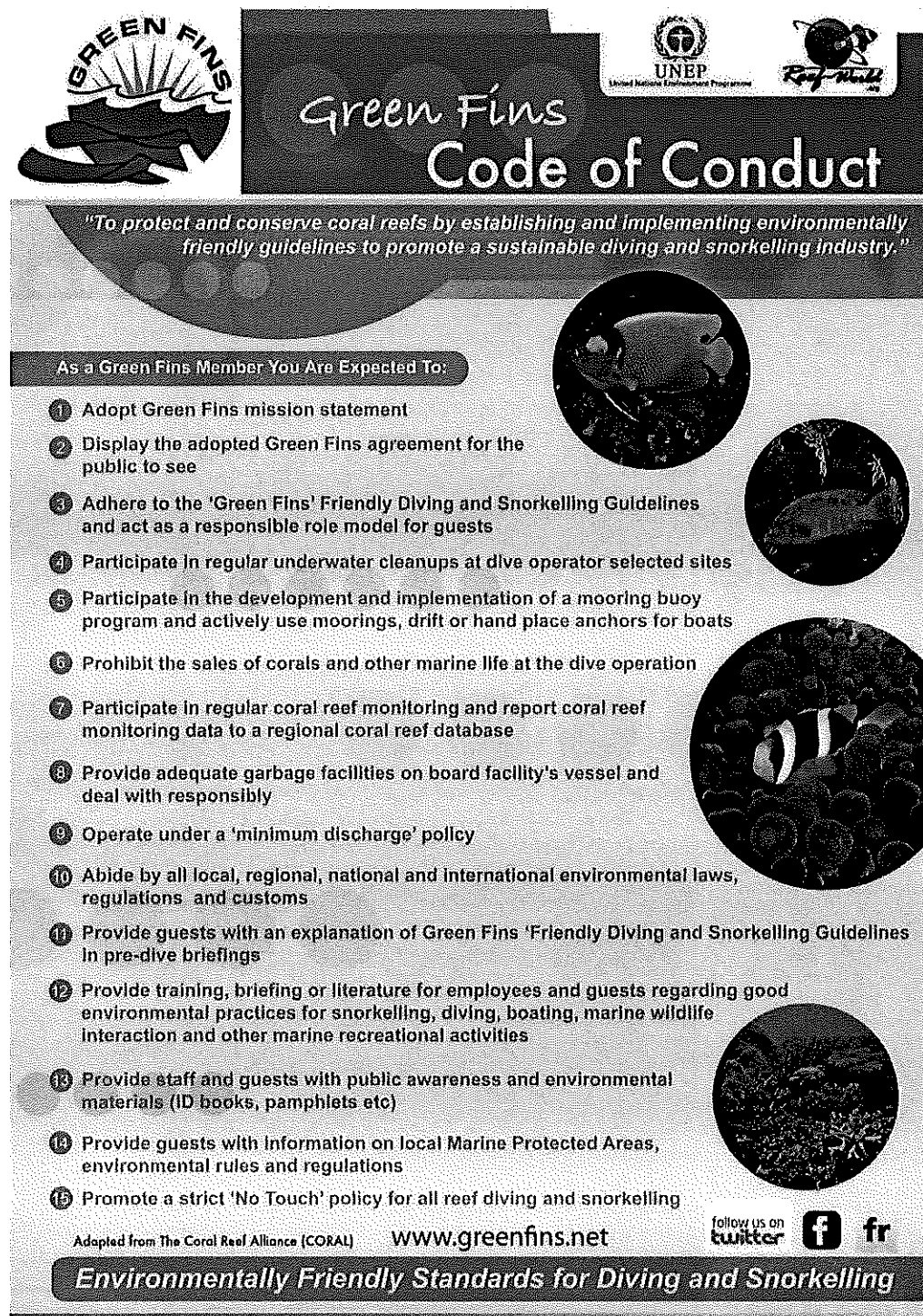
Source: Swarbrooke (1999)

Figure 2 Map of Phuket with example of itinerary routes and dive sites around Phuket Island



Source : <http://www.scubadivingphuket.net/scubadivingphuket/2010/03/22/free-similans-map-similan-islands-map-phuket-dive-sites-map-thailand-dive-sites-map-and-free-map-of-thailand/>

Figure 3 Green Fin Code of Conduct



GREEN FINS

Green Fins Code of Conduct

UNEP United Nations Environment Programme




Reef-World

"To protect and conserve coral reefs by establishing and implementing environmentally friendly guidelines to promote a sustainable diving and snorkelling industry."

As a Green Fins Member You Are Expected To:

- 1 Adopt Green Fins mission statement
- 2 Display the adopted Green Fins agreement for the public to see
- 3 Adhere to the 'Green Fins' Friendly Diving and Snorkelling Guidelines and act as a responsible role model for guests
- 4 Participate in regular underwater cleanups at dive operator selected sites
- 5 Participate in the development and implementation of a mooring buoy program and actively use moorings, drift or hand place anchors for boats
- 6 Prohibit the sales of corals and other marine life at the dive operation
- 7 Participate in regular coral reef monitoring and report coral reef monitoring data to a regional coral reef database
- 8 Provide adequate garbage facilities on board facility's vessel and deal with responsibly
- 9 Operate under a 'minimum discharge' policy
- 10 Abide by all local, regional, national and international environmental laws, regulations and customs
- 11 Provide guests with an explanation of Green Fins 'Friendly Diving and Snorkelling Guidelines' in pre-dive briefings
- 12 Provide training, briefing or literature for employees and guests regarding good environmental practices for snorkelling, diving, boating, marine wildlife interaction and other marine recreational activities
- 13 Provide staff and guests with public awareness and environmental materials (ID books, pamphlets etc)
- 14 Provide guests with information on local Marine Protected Areas, environmental rules and regulations
- 15 Promote a strict 'No Touch' policy for all reef diving and snorkelling

Adapted from The Coral Reef Alliance (CORAL) www.greenfins.net

follow us on   

Environmentally Friendly Standards for Diving and Snorkelling

Appendix C

QUESTIONNAIRE Environmental Impact of Water-Based Activities in Phuket, Thailand

My name is Vipaporn Thongphong, a MBA student from Prince of Songkla University, Phuket Campus. I am now working on my thesis on ‘Environmental Impact of Water-Based Activities in Phuket, Thailand’ and I would like to ask you some questions below. The following questions and the answer will be used for the benefit of academic purpose only. Please answer these questions honestly by making a mark (/) to the answer you want or write down the information in the blank provided.

Thank you for your kind cooperation.

Part 1. Personal Data

1. Gender Male Female

2. Age
 - Under 25 25-40 years 41-55 years
 - 56-60 years More than 60 years

3. Region and country of residence:
 - Europe..... Middle East & Africa..... Asia.....
 - America..... Australia & Oceania..... Other.....

4. Marital Status: Single Married Divorced Widowed

5. Education Attainment:
 - Lower than High School High School Diploma Bachelor degree
 - Graduate degree Master degree PhD Other.....

6. Occupation: Self employed Government Corporate
 Student Housewife Professional
 Other.....

7. Yearly income Less than \$25,000 \$25,001– 49,999
 \$50,000 – 74,999 \$75,000 – 99,999
 \$100,000 or above do not wish to answer

Part 2. Water-based activities Experience

Please note that this questionnaire is not asking you if you enjoyed your holiday here. The questions are specifically about your water-based activities and their impacts on the natural environment.

1. How important do you think it is to be environmentally aware?

- Not Important Of little importance Important Very Important Vitrally Important

2. What is the reason for you to visit Phuket (If your reason have more than one please rank in the space “.....” provide behind the answers)

- Holiday..... Visit friend or family..... Business.....
 Marine, Water-based activities..... Other.....rank.....

3. What types of water-based activities in Phuket do you participate in:

(if you participate more than one activities please rank the activities in the space “.....” provide behind the answers

- Free diving..... Snorkeling..... Scuba diving.....
 Underwater scooter..... Jet-Skiing..... Surfing..... Sunset cruise.....
 Kite Surfing..... Fishing..... Kayaking..... Sailing.....
 Canoeing..... Other..... rank

3.1 Please say in which locations you have participated in water-based activities:

- Patong Beach Kata Beach Karon Beach Naihan Beach
 Nai Thon Beach Nai Yang Beach Ya noi Beach Mai Khow Beach
 Racha Yai-Racha Noi Island Coral Island Phi Phi Island Phang Nga Bay
 Similan Islands Other.....

4. Have you used a tour guide for water-based activities?

- Yes No, please pass to question number 5 and 6

5. If yes, did your guide appear to be concerned about the environment?

- Yes No

Comments.....

6. Did you receive any of the following suggestions on environmental awareness from your tour guide when you participated in water-based activities in Phuket?

- 6.1. Do not leave trash behind, leave it in the bin.
 6.2. Do not touch the coral while scuba diving or snorkeling.
 6.3. Do not make loud noises when entering tourist destinations (e.g. when in mangrove forests).
 6.4. Do not collect or destroy any natural flora or fauna, "leave only your footprints".
 6.5. Do not touch stalactites or stalagmites when visiting caves.
 6.6. Do not feed wildlife (e.g. monkeys, fish, etc).
 6.7. Do not stray away from the path, track, swimming route, etc.
 6.8. Others.....

7. Did you receive any environmental related knowledge of water-based activities in Phuket during the trip?

- Yes (please specify).....
 No

How well are the following practices applied in Phuket and surrounding areas? Please indicate your opinion on a scale of 1 to 5. There is no right or wrong answer. (5 = excellent, 4 = good, 3 = average, 2 = poor, 1 = very poor)

	<i>Excellent</i>	<i>Good</i>	<i>Average</i>	<i>Poor</i>	<i>Very poor</i>
<i>Practices</i>	5	4	3	2	1
1. Educating tourists by providing environmental information on the destinations.					
2. Giving suggestions and warnings for environmentally-friendly behavior of tourists.					
3. Limiting the number of tourists visiting a particular tourist attraction.					
4. Separating recreational activity areas (Zoning e.g separating Jet Skiing from Mangrove Forests)					
5. Clean garbage areas and waste management.					
6. Air pollution management.					
7. Noise pollution management.					
8. Water pollution management.					
9. Conservation of the natural environment					
10. Conservation of the natural flora and fauna (plants and animals)					
11. Conservation of coral reefs.					
12. Conservation of Mangrove forests.					

Part 3. Your opinion regarding water-based activities in Phuket and surrounding area.

1. How satisfied were you with your water-based activities?

- Very satisfied Fairly satisfied Neutral
 Somewhat unsatisfied Very unsatisfied

Comment.....

2. Do you plan to return for more water-based activities in the future?

- Yes (please specify what type).....
 No, because.....

3. Will you recommend your friends and relatives to join water-based activities in the future?

- Yes
 No, because.....

4. During your trip, did you collect any natural plants or animals?

- No
 Yes, please specify.....

5. If possible, did you want to travel outside of the path, track, swimming route, etc ?

- Yes, because.....
 No, because.....

6. Did you see any examples of poor environmental management by the Tour Operators during your water-based activities?

- Yes (please specify).....
 No

7. Did you see any examples of behaviour that make negative impact by other tourists during your water-based activities?

.....
.....
.....
.....

8. What are your recommendations regarding water-based activities and the environment in Phuket?

.....
.....
.....
.....

9. Finally, do you have any advice for the improvement of sustainable water-based activity development in Phuket?

.....
.....
.....
.....

แบบสอบถามการวิจัย

เรื่อง ผลกระทบต่อสิ่งแวดล้อมจากการกิจกรรมทางน้ำในจังหวัดภูเก็ตและบริเวณใกล้เคียง

ข้าพเจ้า นางสาว วิภาพร ทองฟ่อง นักศึกษาปริญญาโท บริหารธุรกิจมหาบัณฑิต สาขาการจัดการ โรงแรมและการท่องเที่ยว มหาวิทยาลัยสงขลานครินทร์ วิทยาเขตภูเก็ต มีความประสงค์ขอความอนุเคราะห์สอบถามข้อมูลจากท่าน เพื่อนำไปใช้ประโยชน์ทางการศึกษาและวิเคราะห์ทางวิชาการ เท่านั้น ขอขอบคุณทุกท่านที่ให้ความร่วมมือในการกรอกแบบสอบถามมา ณ โอกาสนี้

คำชี้แจง โปรดทำเครื่องหมาย (/) หน้าข้อความที่ท่านต้องการตอบเพียงข้อเดียว ยกเว้นข้อที่ตอบได้มากกว่า 1 ข้อ หรือ เติมข้อความในช่องว่างให้สมบูรณ์

ส่วนที่ 1. ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม

1. เพศ ชาย หญิง
2. อายุ
 ต่ำกว่า 25 ปี 25-40 ปี 41-55 ปี 56-60 ปี มากกว่า 60 ปี
3. ภูมิลำเนาจังหวัด
4. สถานภาพ โสด สมรส หย่าร้าง หม้าย
5. ระดับการศึกษาขั้นสูงสุด
 มัธยมศึกษาตอนต้นหรือน้อยกว่า มัธยมศึกษาตอนปลาย อนุปริญญา ปริญญาตรี
 ปริญญาโท ปริญญาเอก อื่น ๆ.....
6. อาชีพ รับราชการ ทำงานบริษัท ประกอบธุรกิจส่วนตัว
 นักวิชาการ แม่บ้าน/พ่อบ้าน นักเรียน/นักศึกษา
 อื่น ๆ.....

7. รายได้เฉลี่ยต่อเดือน () น้อยกว่า 10,000 บาท () 10,001– 20,000 บาท
 () 20,000 – 30,000 บาท () 30,001 – 40,000 บาท
 () มากกว่า 40,000 บาท () ไม่ประสงค์จะให้ข้อมูล

ส่วนที่ 2. ประสพการณ์การทำกิจกรรมทางน้ำ

ข้อชี้แนะ แบบสอบถามนี้จัดทำขึ้นไม่ได้ตามความพึงพอใจของกิจกรรมที่คุณเข้าร่วมแต่จัดทำขึ้นเพื่อสำรวจความคิดเห็นของผลกระทบต่อสิ่งแวดล้อมจากกิจกรรมทางน้ำที่คุณเข้าร่วม

1. ท่านคิดว่าความตระหนักถึงผลกระทบต่อสิ่งแวดล้อมสำคัญระดับไหน

- () ไม่สำคัญ () สำคัญน้อย () สำคัญ () สำคัญมาก () สำคัญมากที่สุด

2. วัตถุประสงค์ที่ท่านมาจังหวัดภูเก็ตคืออะไร (ถ้าวัตถุประสงค์มีมากกว่า 1 ข้อ โปรดเรียงลำดับใน..... ที่อยู่หลังคำตอบ)

- () ท่องเที่ยวพักผ่อน..... () เยี่ยมญาติหรือเพื่อน..... () ธุรกิจ.....
 () กิจกรรมทางทะเลโดยเฉพาะ () อื่น ๆ (โปรดระบุ)..... ลำดับ.....

3. ประเภทกิจกรรมทางน้ำในจังหวัดภูเก็ตและบริเวณใกล้เคียงใดบ้างที่ท่านได้มีส่วนร่วม (ถ้ากิจกรรมที่เข้าร่วมมีมากกว่า 1 ข้อ โปรดเรียงลำดับกิจกรรมที่ท่านเข้าร่วมหลัก ใน..... ที่อยู่หลังคำตอบ)

- () ดำน้ำตื้น..... () ดำน้ำตื้นโดยใช้หน้ากาก () ดำน้ำลึก.....
 () ดำน้ำโดยใช้สกูตเตอร์..... () เจ็ตสกี..... () เซิร์ฟบอร์ด.....
 () ล่องเรือดูพระอาทิตย์ตกดิน..... () ไคฟ์เซิร์ฟฟิ่ง..... () ตกปลา.....
 () ล่องเรือใบ..... () พายเรือคายัค..... () พายเรือแคนู.....
 () อื่น ๆ.....ลำดับ.....

3.1 กรุณาระบุสถานที่ที่ท่านได้เข้าร่วมกิจกรรมทางน้ำ

- () หาดป่าตอง () หาดกะตะ () หาดกะรน () หาดในหาน
 () หาดในทอน () หาดในยาง () หาดยะนุ้ย () หาดไม้ขาว
 () เกาะราชาน้อย - ราชาใหญ่ () เกาะเฮ () เกาะพีพี
 () หมู่เกาะสิมิลัน () อ่าวพังงา () อื่น ๆ.....

4. ท่านได้ใช้บริการมัคคุเทศก์หรือผู้นำเที่ยวในการร่วมกิจกรรมหรือไม่

- () ใช่ () ไม่ใช่, สามารถผ่านคำถามข้อ 5 และ 6

5. ถ้าท่านได้ใช้บริการมัคคุเทศก์หรือผู้นำเที่ยว มัคคุเทศก์หรือผู้นำเที่ยวของท่านได้ตระหนักในเรื่องสิ่งแวดล้อมหรือไม่

- () ตระหนัก () ไม่ตระหนัก

ความคิดเห็น.....

6. ท่านเคยได้รับคำแนะนำ คำเตือนต่างๆ เหล่านี้ข้อใดบ้างจากมัคคุเทศก์หรือผู้นำเที่ยวของท่านขณะมีส่วนร่วมในกิจกรรมการท่องเที่ยวในจังหวัดภูเก็ตและบริเวณใกล้เคียง

- () 6.1. กรุณาอย่าทิ้งขยะเกลื่อนกลาด กรุณาทิ้งให้ลงถังขยะ
 () 6.2. กรุณาอย่าเหยียบ ยืน บนปะการัง ในขณะที่ดำน้ำตื้น หรือ ดำน้ำลึก
 () 6.3. กรุณาอย่าส่งเสียงดังในแหล่งท่องเที่ยว เช่น เมื่อพายเรือชมป่าชายเลน
 () 6.4. กรุณาอย่าเก็บ หรือ ทำลายของป่า เช่น พืชพันธุ์ สัตว์ป่า
 () 6.5. กรุณาอย่าจับ แตะ หินงอก หินย้อย เมื่อเที่ยวถ้ำ
 () 6.6. กรุณาอย่าให้อาหารสัตว์ เช่น ปลา หรือ ลิง
 () 6.7. กรุณาอย่าออกนอกเส้นทางท่องเที่ยวที่จัดไว้
 () 6.8. อื่น ๆ.....

7. ท่านได้รับข้อมูลความรู้ของสิ่งแวดล้อมที่เกี่ยวข้องกับกิจกรรมทางน้ำขณะเข้าร่วมกิจกรรมหรือไม่

- () ได้รับข้อมูล (โปรดระบุ).....
 () ไม่ได้รับข้อมูลใด ๆ

ท่านคิดว่าจังหวัดภูเก็ตและบริเวณใกล้เคียงประยุกต์ใช้ข้อปฏิบัติต่าง ๆ ด้านล่างนี้ได้ในระดับใด
 กรุณาแสดงความคิดเห็นของท่านในระดับที่ท่านเห็นว่าเหมาะสม
 (5 = เยี่ยม, 4 = ดี, 3 = ดีปานกลาง, 2 = แย่, 1 = แย่มาก)

	<i>Excellent</i>	<i>Good</i>	<i>Average</i>	<i>Poor</i>	<i>Very poor</i>
<i>Practices</i>	5	4	3	2	1
1. การให้ความรู้เกี่ยวกับ สิ่งแวดล้อม ของสถานที่ท่องเที่ยว นั้น ๆ					
2. ให้ข้อเสนอแนะและคำเตือน สำหรับพฤติกรรมที่เป็นมิตรกับสิ่ง แวดล้อมของนักท่องเที่ยว					
3. ควบคุม จำกัด จำนวนนักท่องเที่ยว เที่ยวในแต่ละสถานที่ท่องเที่ยว					
4. ควบคุม จำกัด บริเวณของการ ประกอบกิจกรรมแยกออกจากกัน เช่น บริเวณสำหรับเล่นเจ็ทสกีเพื่อ ไม่ให้ส่งเสียงรบกวนต่อป่าชายเลน					
5. การจัดการด้านขยะ					
6. การจัดการมลภาวะทางอากาศ					
7. การจัดการมลภาวะทางเสียง					
8. การจัดการมลภาวะทางน้ำ					
9. การอนุรักษ์ไว้ซึ่งสภาพแวดล้อม ทางธรรมชาติให้อยู่ในรูปแบบเดิม และลดการเปลี่ยนแปลงที่จะเกิดขึ้น					
10. การอนุรักษ์ไว้ซึ่งสิ่งมีชีวิตใน พื้นที่ไม่ให้ถูกทำลาย (พืชและสัตว์)					
11. การอนุรักษ์ปะการัง					
12. การอนุรักษ์ป่าโกงกาง					

ส่วนที่ 3. ความคิดเห็นของคุณเกี่ยวกับกิจกรรมทางน้ำในจังหวัดภูเก็ตและบริเวณใกล้เคียง

1. ท่านได้รับความพึงพอใจในการเข้าร่วมกิจกรรมทางน้ำในระดับใด

- () พอใจเป็นอย่างมาก () ค่อนข้างพอใจ () ปานกลาง
() ค่อนข้างไม่พอใจ () ไม่พอใจเป็นอย่างมาก

Comment.....

2. ท่านวางแผนที่จะกลับมาเข้าร่วมกิจกรรมทางน้ำอีกในอนาคตหรือไม่

- () กลับมา โปรดระบุกิจกรรมที่ท่านวางแผนจะเข้าร่วมในอนาคต.....
() ไม่กลับมา เพราะ.....

3. ท่านจะแนะนำเพื่อน หรือญาติมิตร ให้มาเข้าร่วมกิจกรรมทางน้ำในจังหวัดภูเก็ต และบริเวณใกล้เคียงในอนาคตหรือไม่

- () แนะนำ
() ไม่แนะนำ เพราะ.....

4. ระหว่างการท่องเที่ยว ท่านได้เก็บสะสมพืชพันธุ์ สัตว์ป่า ในแหล่งท่องเที่ยวหรือไม่

- () ไม่
() เก็บ โปรดระบุ.....

5. ถ้าเป็นไปได้ ท่านต้องการเดินทางท่องเที่ยวออกนอกเส้นทางที่จัดไว้ให้หรือไม่

- () ต้องการ เพราะ.....
() ไม่ต้องการ เพราะ.....

6. ในระหว่างการเข้าร่วมกิจกรรมทางน้ำ คุณเห็นตัวอย่างของการจัดการที่ไม่เป็นมิตรต่อสิ่งแวดล้อมของผู้ประกอบการท่องเที่ยวหรือไม่

- () ได้เห็น โปรดระบุ.....
() ไม่เห็น

7. ในระหว่างการเข้าร่วมกิจกรรมทางน้ำ คุณ ได้เห็นตัวอย่างพฤติกรรมที่ทำให้เกิดผลกระทบทางลบ โดยนักท่องเที่ยวอื่นๆ อย่างไรบ้าง

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8. ท่านมีข้อคิดเห็น หรือข้อเสนอแนะอะไรบ้าง เกี่ยวกับกิจกรรมทางน้ำและสิ่งแวดล้อม ในจังหวัดภูเก็ต และ บริเวณใกล้เคียง

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9. ท่านมีข้อคิดเห็น หรือข้อเสนอแนะต่อการพัฒนาอย่างยั่งยืนของการทำกิจกรรมทางน้ำในจังหวัดภูเก็ตและบริเวณใกล้เคียง อย่างไร

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Interview Questions

1. How long this company has been operating tours?
2. What are the locations of your tours and what type of water-based activities does your company provide?
3. Is the company aware of environmental impacts from water-based activities, Describe?
4. What do you understand by the meaning of “best environmental practices”?
5. Describe the activities of your company for preserving the natural environment?
6. Can you share with us some case studies of best environmental practices learned, based on your experiences of the activities you provide to tourists?
7. What type of environmental awareness training do you provide for your staff and tourists?
8. Have you ever read the tourism activity standard TAT guide book?
9. How many tour guides are there in your company? Are they local Phuket people, and do they have tour guide licenses?
10. In your experience of the different nationalities of tourists, which nationalities seem to care most about the natural environment, and which seem to care the least?
11. In your opinion, what are the main water-based activities that damage the natural environment in Phuket and the surrounding islands?
12. Do you know or have dealings with any organization or club that helps to minimize impacts on the natural environment?
13. Do you have any recommendations to improve water-base activities and the protection, reduction or minimizing negative impacts of the natural environment?

คำถามสัมภาษณ์

1. บริษัทได้ดำเนินเปิดกิจการการทัวร์มากี่ปีแล้วคะ
2. บริเวณไหนที่ทางบริษัทได้นำลูกค้าไปเที่ยว และประเภทกิจกรรมทางน้ำที่ ทางบริษัทนำเสนอให้กับลูกค้ามีอะไรบ้างคะ
3. ไม่ทราบว่าทางบริษัทได้ตระหนักถึงผลกระทบต่อสิ่งแวดล้อมที่เกิดจากกิจกรรมทางน้ำบ้างหรือไม่ อย่างไร (โปรดอธิบาย)
4. ทางบริษัทเข้าใจความหมายของคำว่า “การปฏิบัติต่อสิ่งแวดล้อมให้ดีที่สุด” หรือ “Best Environmental Practices” อย่างไร
5. ไม่ทราบว่าทางบริษัทของคุณได้มีกิจกรรมที่รักษาสภาพแวดล้อมทางธรรมชาติบ้างหรือไม่ อย่างไร โปรดอธิบาย
6. กรุณาให้เล่าให้ฟังเกี่ยวกับกรณีศึกษาของการปฏิบัติด้านสิ่งแวดล้อมที่ดีที่สุด บนพื้นฐานของประสบการณ์จริงของกิจกรรมของคุณที่นำเสนอให้กับนักท่องเที่ยว (ถ้ามี)
7. ไม่ทราบว่าทางบริษัทได้จัดอบรมเกี่ยวกับความตระหนักด้านสิ่งแวดล้อมให้แก่พนักงานหรือนักท่องเที่ยวบ้างหรือไม่ อย่างไร
8. ไม่ทราบว่าเคยอ่านมาตรฐานการจัดกิจกรรมของ ททท. บ้างหรือไม่ (ดำน้ำลึก, เรือแคนู หรือ คายัค)
9. ไม่ทราบว่าทางบริษัทของคุณมีไกด์ทั้งหมดกี่คน มีกี่คนที่เป็นคนท้องถิ่นภูเก็ต ไม่ทราบว่ามียกคนที่มีบัตรไกด์
10. จากประสบการณ์ของคุณที่พบเจอคนจากชาติต่างๆมากมาย ในความคิดของคุณ คนประเทศไหนที่คุณคิดว่า มีความเอาใจใส่ รับผิดชอบ รับผิดชอบต่อสภาพแวดล้อมทางธรรมชาติมากที่สุด ชาติไหนน้อยที่สุด
11. ในความคิดของคุณ กิจกรรมทางน้ำประเภทใด ที่มีส่วนทำความเสียหาย ให้แก่สภาพแวดล้อมทางธรรมชาติให้แก่ จังหวัดภูเก็ตและเกาะต่างๆ บริเวณรอบๆ มากที่สุด
12. ทางบริษัทคุณได้ทำงานร่วมกับองค์กรหรือกลุ่มใดๆ ที่ช่วยกันลดผลกระทบที่มีต่อสภาพแวดล้อมทางธรรมชาติบ้างหรือไม่
13. คุณมีคำแนะนำใดๆเพื่อพัฒนาและปรับปรุงกิจกรรมทางน้ำ และเพื่อป้องกันหรือลดผลกระทบในแง่ลบต่อสภาพธรรมชาติของสิ่งแวดล้อมที่อาจจะเกิดขึ้น

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Awards

Best Oral Presentation Award

Best Paper Award