

SCUBA DIVING TOURISM IN PHUKET, THAILAND:
PURSUING SUSTAINABILITY

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ABSTRACT

Marine tourism constitutes an increasingly significant component of the global tourism industry and one sector in particular, recreational scuba diving, is experiencing rapid growth. Much of the diving activity is concentrated around coral reefs, which has raised questions about the ability of some coral environments to sustain desired levels of biophysical and social quality.

This study set out to make a contribution to the sustainability of the dive tourism industry in Phuket, Thailand, by focusing on the experiences of the dive tourists. To determine if the rapid growth of dive tourism and the resulting concentration of divers in the region is negatively impacting the visitor experience, pre-and-post dive surveys were completed by 632 divers. The visitor survey provides insight into the demographics, motivations and satisfactions of dive tourists, highlights the level of diver and ecotourist specialization, and examines the awareness of marine conservation issues among the divers who visit Phuket.

The results suggest that the divers in Phuket have typical demographic profiles when compared to other studies on scuba divers. The features most valued by divers in Phuket relate to the marine environment, which supports previous studies on divers and dive tourism. Divers rated the variety and amount of marine life, the presence of clear, unpolluted, undamaged dive sites, good underwater visibility and large creatures such as whale sharks and manta rays among the most important dive trip features.


Overall, divers were generally satisfied with their Phuket dive experience; however, the degree of satisfaction varies among dive trip features. The divers were generally satisfied with the service features provided on their dive trip, however, features related to the quality and condition of the marine environment were less satisfying. Many of these less satisfying features are those that attracted divers to the region, and are among the most valued aspects of the diving experience.


The results highlighted that divers are not a homogeneous group, and the degree of diver satisfactions varied accordingly. This variability is explained in part by the recreation specialization concept, and two specialization indices were used. The 'diver specialization index' considered the amount and type of diving experience that each individual had. Specialized divers were less satisfied with the Phuket experience than were unspecialized divers. This concurs with previous studies that suggest as specialization increases, individuals develop more specific and demanding expectations for their leisure experience. The 'ecotourist specialization index' considered the divers' environmental attitudes and the importance of various conservation-related


initiatives and features. The results showed that specialized ecotourists were more satisfied than unspecialized ecotourists. This finding was somewhat surprising as it contradicts previous studies that suggest more specialized ecotourists require a higher level of resource quality to be satisfied. However, possible explanations are discussed.

Divers were asked on both the pre and post dive survey about their perception of the impact of diving on the reef. The pre and post dive results were then compared to determine how the divers' perception of impact changed over the course of the dive trip. After the dive, divers were less concerned about the negative impacts of diving on the reef, yet were also less convinced that diving has positive impacts. Overall, divers were more 'unsure' of the impacts of diving following their dive trip than before. The results indicated that almost thirty percent of the divers surveyed witnessed a member of their dive group causing damage to the reef. Divers who personally viewed reef damage were more likely than other divers to express willingness to become involved in marine conservation efforts.

Overall, the results indicate that the Phuket dive industry is currently not sustainable, and will continue to evolve over time in ways that will further contribute to a lack of sustainability. Improved management of the coral reefs and the dive industry from both a social and an environmental perspective is required to ensure the sustainability of dive tourism activities. Recommendations that will contribute to the on-going success of the industry are provided.


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Chapter 1. INTRODUCTION

1.1. International Tourism

Over the past fifty years, international tourism has grown exponentially. Close to seven hundred million people traveled internationally during 2000, with the greatest increase in tourism arrivals occurring in Eastern Asia and the Pacific (World Tourism Organization, WTO 2001). With receipts totaling more than four hundred and seventy-five billion US dollars in 2000, international tourism is thought to be the world's largest industry (WTO 2001). The tourism industry is also the world's largest employer, providing jobs for nearly one quarter of the world's working population either directly or indirectly (World Travel and Tourism Council, WTTC 1999). In recent decades, a wide range of problems, including natural disasters, serious social conflicts, wars, economic crises and terrorism have adversely affected tourism. Despite these concerns, the global tourism industry maintained an average growth rate of 4.3 percent per year from 1990-2000. International tourism arrivals slumped by 1.3 percent in 2001, the only significant decrease since World War II (WTO 2002). The September 11th terrorist attacks in New York City had a more dramatic impact on international tourism than any other crisis in recent years, generating a large degree of hesitation and fear of traveling among many. Despite the magnitude of this crisis, the World Tourism Organization suggests that the industry will regain pre-crisis levels by the third or fourth quarter of 2002 (WTO 2002).

With its ability to adapt, survive and overcome crises, the global tourism market is clearly a powerful economic force. It is also an industry with the potential to have serious impacts on the host environments (e.g. see Marion & Rogers 1994; Ap & Crompton 1998; Buerger *et al.*, 2000). This is a major concern, as the success of many tourism ventures depends largely on the presence of desirable and attractive natural resources. Previously inaccessible areas, with their 'pristine' environments and 'untouched' wilderness, have become increasingly popular tourist destinations. People have long been drawn to coastal areas, however, in recent decades, interest in the world's oceans as a recreation resource has been stimulated by the media's portrayal of the marine environment, while the advancement of underwater breathing gear has expanded interest in the world's coral reefs. Improved air and sea transport has resulted in an influx of visitors to these breathtaking and fragile coastal areas, often creating serious environmental impacts in areas that lack the capacity to deal with such problems. In short, the isolation that once benefited the world's coral reef resources is virtually gone.

As awareness and understanding of both the sensitivity and the value of coral reef environments increases, approaches to the management of such regions continues to evolve. The

purpose of this thesis is to examine the nature of a popular marine tourism activity, recreational scuba diving, in terms of the motivations and satisfactions of the divers, and their perception of marine environmental impacts. The ultimate goal of this research is to provide recommendations for resource and dive industry managers in Phuket, Thailand, which will contribute to the sustainable development and management of this increasingly popular industry.

This chapter provides background information on alternative tourism, marine tourism and dive tourism to set the context for the research project. The more specific objectives of the study are then presented, followed by a thesis outline.

1.2. Alternative Tourism

During recent decades, the tourism industry has recognized the importance of maintaining the quality of the 'tourism environment', as the natural environment plays a primary role in attracting tourists to specific destinations. Due to the mounting evidence of negative impacts associated with the rapidly expanding tourism sector, the early 1970's saw the emergence of an 'anti-tourism' rhetoric among the traveling public (Weaver 1995). In response to the problems associated with this large scale 'mass tourism', the concept of 'alternative tourism' emerged and has received attention in the literature in recent years (e.g. Dearden & Harron 1994; Shackley 1996). Simply put, alternative tourism is any type of tourism that is an alternative to mass tourism that makes use of strategies that are better suited to the local circumstances at the host environment (Goodwin 1996). Alternative tourism should contribute to local community development and promote the equitable distribution of natural and financial resources, quality of life for the local residents and environmental sustainability¹ (Kontogeorgopolous 1998). Subsets of alternative tourism include adventure tourism, in which the focus is on an activity where inherent risk is involved, and nature based tourism, where viewing nature is the primary objective.

Originally perceived to appeal predominantly to daredevils and thrill-seekers, adventure tourism activities are now being sought by millions of people throughout the world. Such activities contain elements of personal challenge, risk and excitement, and often take place in inaccessible, wilderness environments (Economist Intelligence Unit, EIU 1992). Adventure tourism experiences differ from traditional tourism experiences because they pose elements of real or perceived danger to participants. The element of risk can be a motivating factor for participation in adventure travel activities such as rock climbing, white water kayaking,

¹ 'Sustainability' is defined as providing for the needs of the present without jeopardizing the provision of needs in the future (Hodgson 1997).

paragliding and skydiving. For some people, the risk is the ultimate attraction, while for others, it is merely accepted as a necessary component of participation in their chosen adventure tourism activity (Bentley & Page 2001).

Nature-based tourism is travel for the purpose of enjoying undeveloped natural areas or wildlife (Goodwin 1996). This form of tourism involves marketing features of the natural environment to visitors, and encompasses all types of tourism which use natural resources in a wild or undeveloped form. Nature based tourism includes a wide range of activities, from passive scenery and wildlife viewing, to physically exerting activities such as hiking and mountaineering. Contrary to popular belief, nature based tourism can in fact be consumptive, as in the case of sport hunting. Ecotourism, wildlife tourism, wilderness tourism, low impact tourism, and green tourism are all forms of nature based tourism. While these terms are often used interchangeably, the principles upon which they are based are very different, and only some forms of nature tourism make a positive contribution to conservation (Goodwin 1996). Such operations constitute ecotourism. The Ecotourism Society (1991) defines ecotourism as 'responsible travel to natural areas, that conserves the environment and improves the well being of the local people'. True ecotourism is inherently different from the other forms of nature tourism because it focuses not only on the type of activity, but also on the impact that the activity has on the biophysical and social environment (Honey 1999).

The terms ecotourism and adventure tourism are often used synonymously in the literature and some forms of tourism incorporate elements of both. Marine tourism activities such as scuba diving include characteristics of ecotourism because they occur in natural environments and provide opportunities for learning, and adventure tourism because they include some degree of risk and often take place in the coastal and marine 'wilderness'. International tourism development has been primarily focussed in coastal regions throughout the world (Sweet 1995), and over recent years, marine tourism has been receiving increasing amounts of attention in the literature.

1.3. Marine Tourism

Marine tourism contributes significantly to the global tourism industry, and it is reported to be growing more rapidly than any other tourism sector (Orams 1999). Prior to the 1960's, inaccessibility protected much of the marine environment from recreational use. Relatively recent technological advances such as high-speed boats and improvements in self-contained underwater breathing apparatus (hereafter referred to as scuba) have made marine environments more accessible to a greater number of people. This growth has significant implications for

marine resource managers. Unlike land-based tourism activities that often occur over large areas, marine tourism targets relatively small coastal regions. Because these coastal belt areas are home to more than seventy percent of the world's population (World Resources Institute, WRI 2000), the areas deemed suitable for marine tourism activities already experience a great deal of pressure in the competition for limited resources. Awareness of the diminishing quality of many of the world's coastal regions initiated the establishment of marine parks and protected areas (hereafter referred to as MPA's) throughout the world in the 1960's and 1970's and such conservation efforts continue today. While intended to limit the human impact and regulate the use of such areas, the designation of an MPA often attracts a great deal of attention from individuals who wish to use the area for recreation, such as divers, fishers, boaters and conservationists. Consequently, marine tourism activities make increasingly heavy use of protected areas. The establishment of a marine park or preserve does not rule out continuing impacts from a variety of sources, including recreational activities (Tilmant 1987), and as the use of a MPA intensifies, the potential for marine resource degradation and conflict among users increases. A main challenge for marine resource management strategies is to protect the environment from detrimental impacts while promoting tourism activities that are enjoyable and promote the sustainable use of the marine environment. Recreational scuba diving is one branch of marine tourism that depends heavily on marine protected areas, and is the main focus of this thesis.

1.3.1. Recreational Scuba Diving: The Development of a Sport

The invention of scuba equipment has played a key role in the development of the marine tourism industry. There has been an enormous increase in the number of divers in recent years. An estimated fourteen million people dive annually (Shackley 1998), half of whom are considered 'active divers'² (PADI 2002). Recreational scuba diving is one of the world's fastest growing sports, and is a rapidly increasing component of the international tourism industry (Davis *et al.*, 1995; Mundet & Ribera 2001). Scuba diving is now a multi billion dollar industry, and it is estimated that up to one million people become certified divers each year³ (PADI 2002).

The rapid growth of marine tourism, and in particular, recreational scuba diving during the past two decades has been concentrated around the world's coral reefs, many of which are located in tropical, developing countries. Coral reefs are the most diverse and spectacular of marine ecosystems, and provide a vital source of food and income for millions of people (Munro

²Active divers are certified a dive training agency and dive on a regular basis. Non-active divers are those who participate in resort or introductory dives under the close supervision of an instructor, but do not hold a dive training certificate.

1996). They are also among the world's most threatened and endangered ecosystems, and are susceptible to damage from a variety of sources. Recent estimates suggest that twenty-seven percent of the world's coral reefs have been destroyed (Global Coral Reef Monitoring Network, GCRMN 2000), and an additional sixty percent are considered at risk due to human disturbance (Burke *et al.*, 1998). The world's largest and most diverse coral reef systems are found in South East Asia. South East Asian reefs are also experiencing the greatest threats from human activities. Presently, thirty-four percent of the reefs in this area have been destroyed, and predictions for the future of the remaining reefs are discouraging (GCRMN 2002).

Human impacts are a major cause of reef degradation throughout the world (International Coral Reef Information Network, ICRIN 2002). Many of these impacts result from mass tourism development in coastal regions, which have exploited the reefs for short-term gain without consideration of the long-term impacts (Sweeting 1995). Reefs have been mined of coral, rocks and sand to provide building materials for tourism infrastructure, and increased habitation of coastal regions has led to a decline in water quality due to sediment and nutrient pollution. Large-scale tourism development also brings great demand for fresh seafood (Hawkins & Roberts 1994). Consequently, many coral areas are affected by an overexploitation of fish resources, often by destructive and unsustainable fishing techniques such as blast (dynamite) fishing.

In contrast to these extractive uses, dive tourism places economic value on the conservation and protection of the marine environment, particularly coral reefs, and has the potential to be a sustainable form of economic activity. Diving has the potential to be a low impact activity that stimulates local economies and inspires local governments to protect coral reefs. It is viewed as a viable alternative to more destructive practices such as dynamite fishing and mining, and the growing international awareness of the plight of the coral reef has been in large part attributed to diving (Orams 1999). However, with the sport's accelerated growth, particularly in marine protected areas, the potential for conflict to occur among conservation, recreation and other values is considerable. The growing dive tourism industry and the increasing number of live-aboard dive vessels means that divers can go to sea for a week or more and dive in previously untouched coral reefs. Additionally, high-speed boats mean that ever-increasing numbers of divers can gain access to popular dive sites during day trips. These factors have resulted in a great concentration of divers at specific dive sites throughout the world's coral reefs. Questions about the ability of these coral reef environments to sustain desired levels of

³ PADI, the Professional Association of Dive Instructors, is one of the major dive training agencies. This agency certifies two thirds of new divers in the U.S., and one half of new divers throughout the world. More than half a million divers were certified by PADI alone in 2000 (PADI 2002).

biophysical and social quality for both the local communities who use them and the marine tourists have also been raised.

1.3.2. The Impacts of Scuba Diving

Until the early 1990's, diving was perceived as a low impact activity compatible with the sustainable use of marine resources. However, recent studies (Allen 1992; Dixon *et al.*, 1993; Davis & Tisdell 1995; Davis *et al.*, 1995; Davis *et al.*, 1996; Harriot *et al.* 1997; Medio *et al.*, 1997; Shackley 1998) have indicated that the increase in diver traffic is negatively impacting the coral reefs and neighboring environments, through the release of pollutants from dive boats, and careless diver behavior. Several of these studies concluded that diving is damaging intensively used reefs, and some popular sites have been found to have diver visitation rates approaching or exceeding the limits of sustainability. Although there is some controversy over the magnitude of the impacts caused by recreational diving, most researchers agree that a significant portion of the damage is due to various aspects of the dive trips (such as anchor damage and pollutants from vessels) or dive tourism development (such as coastal erosion and sedimentation from construction, sewage and runoff) rather than by diver misuse alone. While impacts from individual divers may be minor, the cumulative impacts of many divers may be substantial (Dixon *et al.*, 1993; Davis *et al.*, 1995). Furthermore, coral reefs are often open access areas that can be used by an unlimited number of people because no mechanisms exist to exclude visitors from the site. Because such areas are considered 'common property', they are used by many, yet are the responsibility of none. In the competition for limited resources, this type of unregulated and uncontrolled access frequently results in a 'Tragedy of the Commons' (Hardin 1968) type degradation, whereby the resources are exploited by individuals seeking to 'get the most' from environments that they are ultimately not responsible for. While it is of societal benefit that the coral reef environments be used sustainably, it is of individual benefit to take advantage of these environments. Thus, there is little incentive for users to implement conservation minded practices to their detriment, while other users continue with 'business as usual'.

In addition to the environmental impacts of diving, the social thresholds of the reef environment have been examined, and the concept of social carrying capacity has been applied to reef activities. Social carry capacity is the level of use beyond which a person's experience in an environment is affected by the presence of others (Stankey 1973; Shafer *et al.*, 1999). Research suggests that crowding and conflict between both the various reef users (e.g. fishers, other marine tourists), and among the divers themselves is becoming more of an issue as the number of divers increases (Allen 1992; Dixon *et al.*, 1993). Because divers are not homogeneous in terms of their

motivations, attitudes, expectations and satisfactions (Davis *et al.*, 1996; Moscardo 1999), management directed at the 'average' visitor may fail to provide all divers with satisfying experiences. The concept of 'recreation specialization' is a tool for disaggregating participants in a particular activity into more uniform subgroups based on their backgrounds and experiences (Bryan 1977). When divers with incompatible expectations and attitudes are mixed together, the potential for conflict rises, detracting from the quality of the dive experience (Jacob & Schreyer 1980). Many well-used dive sites have experienced significant amenity-value losses from overcrowding, conflict and diver damage (Dixon 1993; Inglis *et al.*, 1999). If resource and industry managers are to succeed in achieving a balance between the conservation of marine resources and the provision of positive visitor experiences, dive industry and marine resource management strategies for managing the growth of the industry must be compatible (Davis & Tisdell 1996).

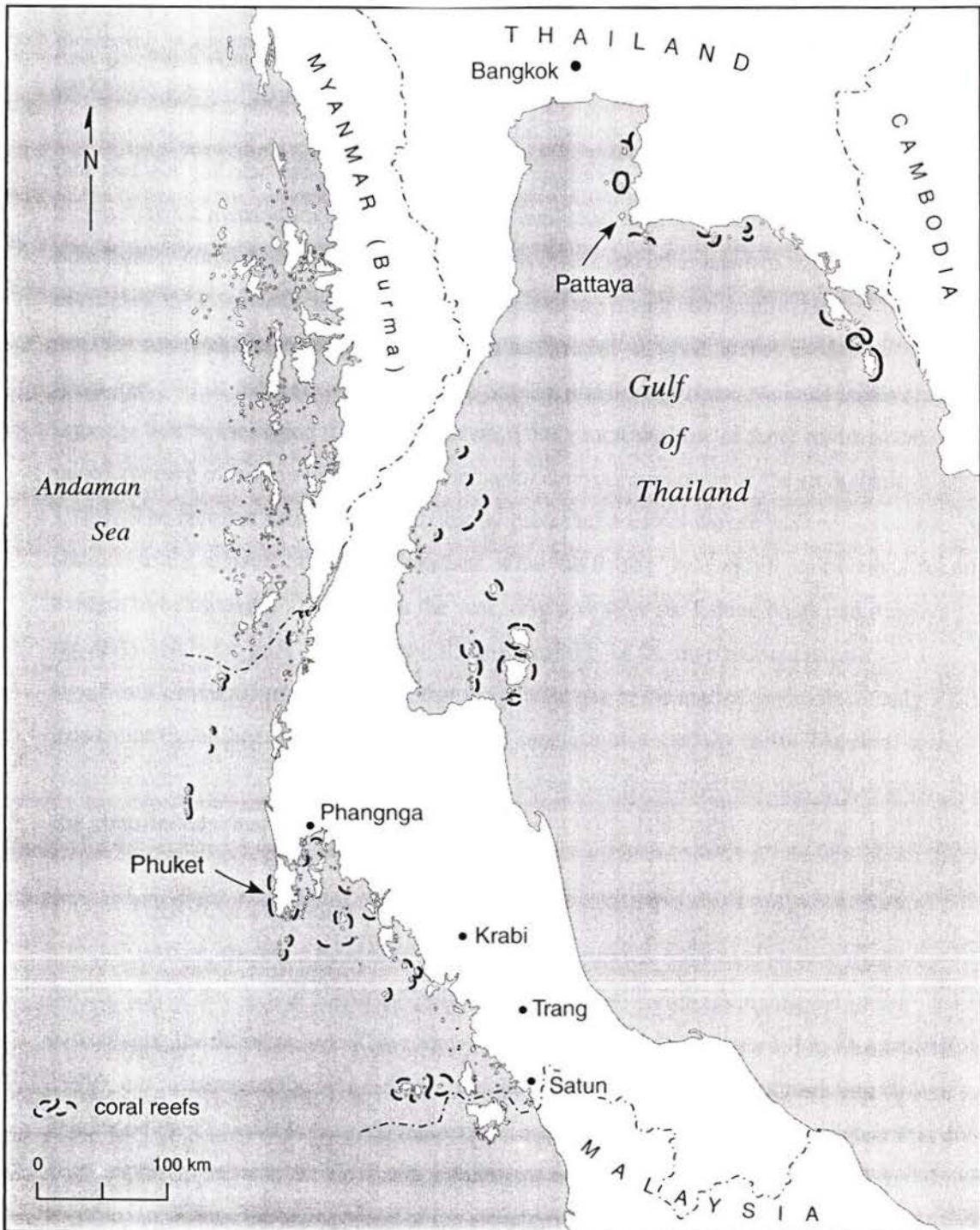
1.4. Dive Tourism in Thailand

Tourism in Thailand has been growing steadily since the early 1980's, and more than 9.5 million people visited the country in 2000 (Tourism Authority of Thailand, TAT 2002). A wide variety of tourist activities, including cultural, marine and sport tourism draw people with diverse economic and social backgrounds to Thailand. Thailand's coastal waters offer excellent conditions for coral reef growth, and over three hundred major reef groups covering approximately 12,000 square kilometers surround the country (Thailand Coastal Resources Management Project 1991) (Figure 1.1). Coral reefs in Thailand support a variety of activities, although significant changes in reef use patterns have occurred throughout the last two decades (Hale & Olsen 1993). Tourism-based activities are replacing traditional fisheries as the primary patrons of the reef, and dive tourism has become a popular activity along Thailand's coastal areas.

Located in the eastern Andaman Sea, Thailand's largest island, Phuket, is a popular holiday destination surrounded by numerous well-known and intensively used dive sites. The growth of dive tourism in this area has been rapid. Less than fifteen years ago, it was possible to spend a week among the islands and never encounter another tourist vessel (Piprell 1997). During the current winter seasons, the best dive sites are utilized daily by divers and snorkellers who are brought by numerous liveaboard and day trip boats from Phuket.

A handful of local reefs are used daily for diving, and many of the region's most popular dive sites, considered among the world's best, are located within the nearby Similan and Surin Marine National Parks. Renowned for their prolific corals, diverse marine creatures and stunning submarine topography, these sites have been known to offer divers the opportunity to interact

Figure 1.1. The Approximate Location of Thailand's Coral Reefs



with whale sharks, *Rhiniodon typus*, the world's largest fish (Chettamart *et al.*, 1998; Piprell 1998). Increasing crowding and degradation at Phuket's local reefs is placing increased pressure on the dive sites located within the MPA's, and the use of these areas for diving is steadily increasing. Concern has been expressed that the resulting concentration of divers within the parks may place the marine flora and fauna under high stress levels, making them susceptible to damage and ultimately compromising the special features for which the region is known. Many fear that this will also negatively influence the experiences of the divers (Hale & Olsen 1993).

As the demand for scuba diving opportunities in the region escalates, so does the potential for conflict among divers, and between divers and other users of the marine environment. It is widely acknowledged throughout the diving community that the local sites used for day trips are showing signs of stress and are not 'as good as they used to be' even a few years ago. While the reef conditions in the Similan and Surin Marine National Parks are known to be the best in the region (Chettamart *et al.*, 1998), increased use of these environments has raised concern over the social and environmental carrying capacities of the reefs (Hale & Olsen 1993). The fact that these regions are legally protected does not ensure their conservation. In addition to the impacts of diving, violations of the 'no fishing' rule within park boundaries are thought to be common. Throughout the year, dive operators see fishing boats and trawlers regularly inside the park⁴. Ultimately, the sustainability of the dive tourism industry is a significant concern, and there is fear that the present use of the marine environment may jeopardize the ability of these areas to support such use over the long term. The coral reef environments must be managed to ensure their protection from improper use, and overuse, that can contribute to their degradation.

1.5. Purpose of This Study

To date, there has been little comprehensive research conducted on dive tourism, particularly in developing countries. Studies have touched on the environmental issues surrounding the development of dive tourism in Thailand (Hale & Olsen 1993; Flummerfelt 1999), but research on the dive industry and the divers themselves has not been undertaken. Details on the Phuket dive tourism industry are particularly lacking. While it is clear that diving is an important industry on the island, information on this popular sport has never been formally recorded, and thus, the significance of the industry cannot be quantified.

⁴ Such sightings have been documented by numerous Phuket dive operators and staff, and were reported to this researcher on many occasions. In fact, it seems that such incidents are so common that they are often overlooked.

As dive tourism in Phuket continues to expand each year, it becomes increasingly important to maintain a balance between the use and conservation of the marine resources upon which the industry depends. It is necessary to consider the social as well as the biological thresholds when managing the dive sites and the marine protected areas to meet both conservation and recreational needs. The maintenance of the marine environment is a critical aspect in the sustainability of the dive industry, both in terms of attracting divers to the area and satisfying them during their visit. A clear understanding of the full range of opportunities sought by the divers, and the way in which they perceive the physical and social resource conditions at the dive sites is necessary to protect the quality of these environments for dive tourism. Because this industry is inherently dependent on the environment, it is in the best interest of both the users and the managers to maintain a balance between use and acceptable environmental conditions. Ultimately, the sustainability of dive tourism in Phuket requires that the divers are satisfied with their experience, and that strategies to minimize any negative impacts on the reefs are effective.

The overall purpose of this study is to contribute to the sustainability of the dive industry. This will be achieved by obtaining an understanding of the demand for, and the supply of diving opportunities in Phuket, and using this information to guide future visitor and resource management strategies.

1.5.1. Study Objectives

The specific objectives of this study are:

1. To characterize the nature of the scuba diving industry in Phuket, Thailand by creating a profile of both the divers and the dive tourism industry. Specifically, the study will:
 - i. Profile the divers in terms of their:
 - motivations and expectations for diving and for their dive trip
 - satisfactions with the Phuket diving experience
 - perceptions of impacts from diving and dive trips
 - trip characteristics
 - expenditures during their stay in Thailand
 - degree of diver and ecotourist specialization
 - ii. Profile the dive industry in terms of the:
 - size of the industry
 - structure of the industry
 - dive boat destinations

2. To make recommendations towards:

- i. Improving the visitor experience
- ii. Management of the dive industry and dive sites from both a social and environmental perspective.

1.6. Thesis Outline

The thesis is organized into eleven chapters. Chapter two reviews the history of tourism in Thailand and describes the development of the dive tourism industry in Phuket. The current opportunities for diving in this area are also discussed. Chapter three outlines the research design and data collection procedures. Chapters four through nine each focus on a specific segment of the research, and are organized as distinct articles. Each chapter includes a review of the relevant literature (as required), a presentation of the results, and a discussion. Chapter four characterizes the divers who visit Phuket, and summarizes the financial impact of diving on the Thai economy. Chapter five presents the data on diver motivations and importance, while chapter six focuses on diver satisfaction. Chapter seven deals with recreation specialization, and characterizes the Phuket divers in terms of their degree of diver specialization, and ecotourist specialization. Chapter eight integrates the motivation / importance data and the satisfaction data through the use of action grids, and chapter nine focuses on the impacts of diving on the reef. Finally, chapter ten summarizes the results, discusses implications and provides recommendations for ensuring the sustainability of the Phuket dive tourism industry.

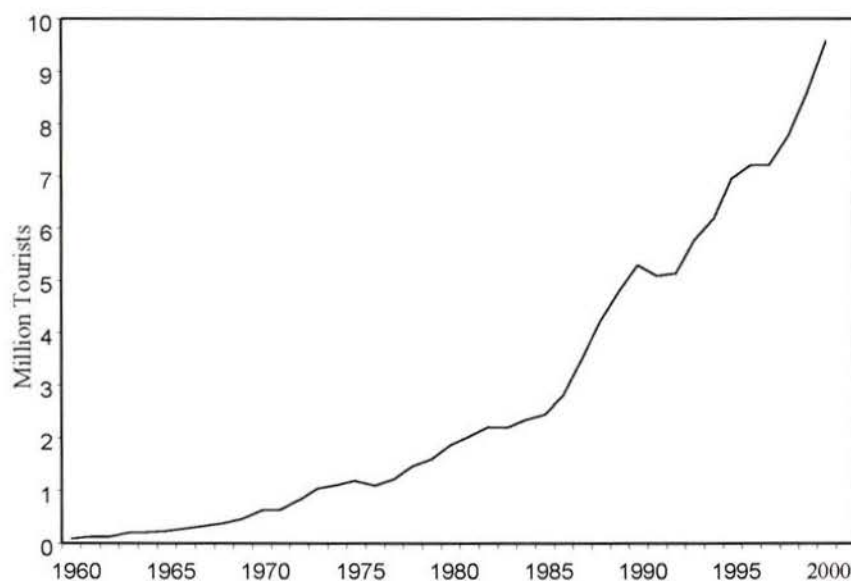
Chapter 2. BACKGROUND INFORMATION

2.1. Tourism in Thailand

South East Asia, is becoming one of the world's favorite tourism destinations, with demand often outstripping tourist facilities (WTO 2001). This region is the most rapidly developing in terms of tourist arrivals, with a growth rate of 14.7 percent for 2000 compared to the world-wide growth rate of 7.4 percent (WTO 2001).

Tourism in Thailand has grown dramatically since the 1980's (see figure 2.1), and more than 9.5 million tourists visited the country in 2000 (TAT 2001). Tourism has been the leading source of foreign exchange since 1982 (Demaine 2000) and international tourism receipts for the country totaled 7.159 million US dollars in 2000 (TAT 2000). In 1999 the World Travel and Tourism Organization (WTTO) estimated that Thailand's travel and tourism industry was responsible for thirteen percent of the country's jobs, and fifteen percent of the gross domestic product (GDP). While presently responsible for more than four million jobs throughout Thailand, the travel and tourism industry is forecasted to provide 5.6 million jobs by the end of 2010 (WTTO 1999). Overall, Thailand's travel and tourism industry has prospered over recent decades despite the negative effects of the Gulf War in 1991-1992 and the economic downturn that followed the devaluation of the Thai Baht in 1997.

Figure 2.1. Tourist Arrivals to Thailand, 1960-2000



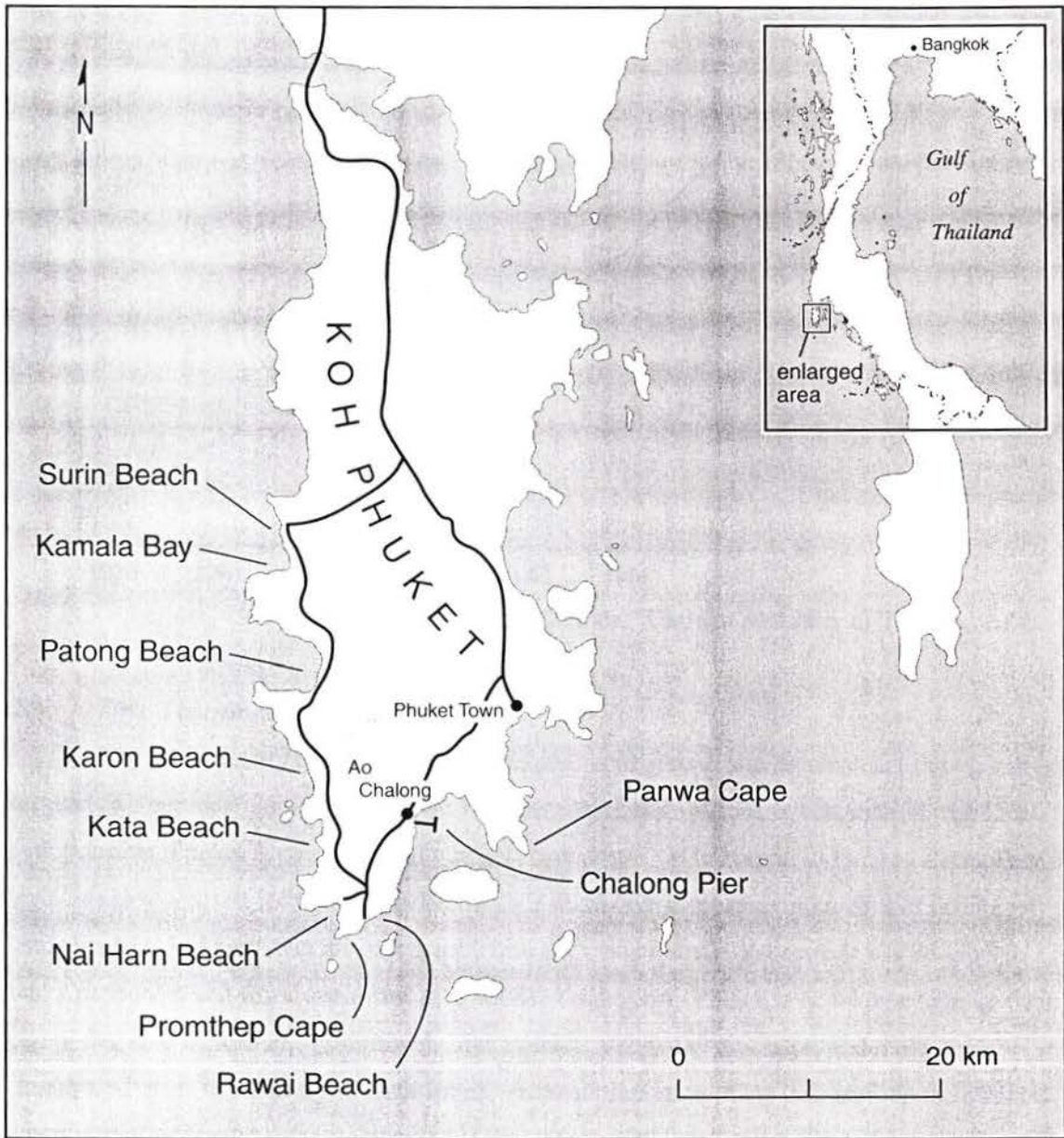
Source: Tourism Authority of Thailand 2000

2.2 Tourism in Phuket

Phuket is a popular holiday destination located along Thailand's southern coast (see figure 2.2). Covering 543 square kilometres, Phuket had an official population of 221,501 in 1998, however, when the large expatriate community is taken into account, the population is estimated to be approximately 450,000 (Phuket Gazette January 15-30 2000). Agriculture, prawn farming and pearl farming are common on the island, however, since the early 1980's, tourism has been Phuket's chief source of income (TAT 2000). Radical changes have occurred in Phuket's tourism industry over the past two decades; initially a haven for 'drifters' and budget youth travelers, the island soon developed a reputation as a 'tropical paradise', and tourist visitation increased dramatically (See figure 2.3). The Island hosted almost 3.5 million visitors in 2000, seventy-two percent of which were international tourists (TAT 2001). Phuket now receives more than one quarter of the international tourists who visit Thailand each year (computed from TAT data, 2001).

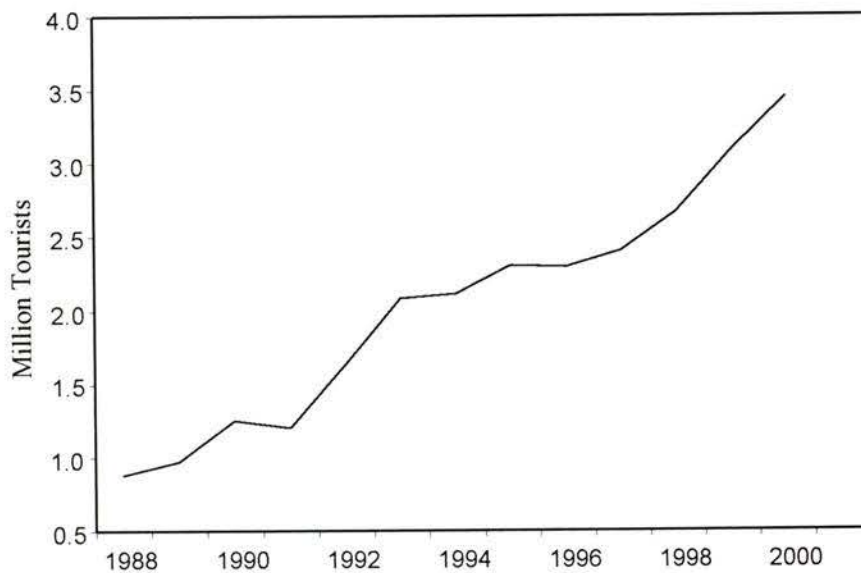
Marketed for its natural beauty and beach scenery, Phuket is known as 'Thailand's Riviera' (TAT 2000). The development of Phuket as a tourism destination followed the drop in visitation to Pattaya, Thailand's other international destination resort, due to environmental degradation (Cohen 1996). Damage resulting from uncontrolled tourism development was evident in Pattaya by the mid 1970's, and the beaches were unsuitable for swimming by the mid 1980's, at which time only one to ten percent of the nearby coral reefs frequented by tourists were still surviving (Thailand Development Research Institute Foundation, TDRIF 1993). During this time, international tourism to Phuket increased dramatically, and a rush in hotel construction along the coast occurred to accommodate the increasing number of tourists (Ruyabhom & Phantumvanit 1988). Over the years, the attractions offered on the island have diversified. Access to the island was made easier when the Phuket airport opened to international flights in 1983, and to this day, tourism facilities continue to develop. Many fear that Phuket is becoming too developed, and the possibility that the island is becoming the 'Pattaya of the South' is a common concern. Tourism has spread out geographically on Phuket. Presently, most of the island's beaches are either occupied by tourism developments (e.g. Patong, Karon, Kata and Kamala Beaches) or are in the process of being developed (e.g. Rawai, Nai Harn and Surin Beaches). Large resorts and hotels line the coast, while smaller enterprises are situated on the side streets. Hundreds of bars have opened in Phuket's major resort areas, and sex tourism is a common activity (Cohen 1996). A variety of leisure and sporting amenities are now available in Phuket, offering vacationers new possibilities beyond the sea, sun, sand and sex opportunities.

Figure 2.2. Phuket's Location in Thailand.



The past two decades have seen the emergence of new kinds of tourism, the most important of which, for the purpose of this paper, is scuba diving tourism.

Figure 2.3. Tourist Arrivals to Phuket 1988-2000



Source: Tourism Authority of Thailand 2000.

2.3. Dive Tourism in Phuket

The dive industry in Phuket has experienced rapid growth and development throughout the past two decades. Initially started by Western expatriates working in conjunction with local entrepreneurs, Phuket is now Thailand's largest dive centre. What began in 1979 as a relatively unknown dive-tourism location comprised of four small dive companies, a handful of fishing boats used for local day-trip dives at nearby dive sites, and a single compressor has developed into a prominent and world-renowned dive holiday destination. Phuket is now home to more than eighty-five dive companies, who provide dive training, single-day dive trips, and multi-day 'liveaboard' trips to a variety of destinations. A large proportion of the dive staff on the island is comprised of international instructors, and training is available in many languages.

2.3.1 Day Trip Diving Opportunities

There are several popular dive sites (figure 2.4) within a three-hour boat trip from Phuket. These 'day trips' depart in the early morning and return in the late afternoon, giving divers the opportunity to complete either two or three dives during the trip. Most trips depart from the Chalong Bay Pier, on the southern tip of the island. The day trip dive sites are often crowded as

they are utilized not only by dive operators from Phuket, but by operators on nearby Phi Phi Island as well.

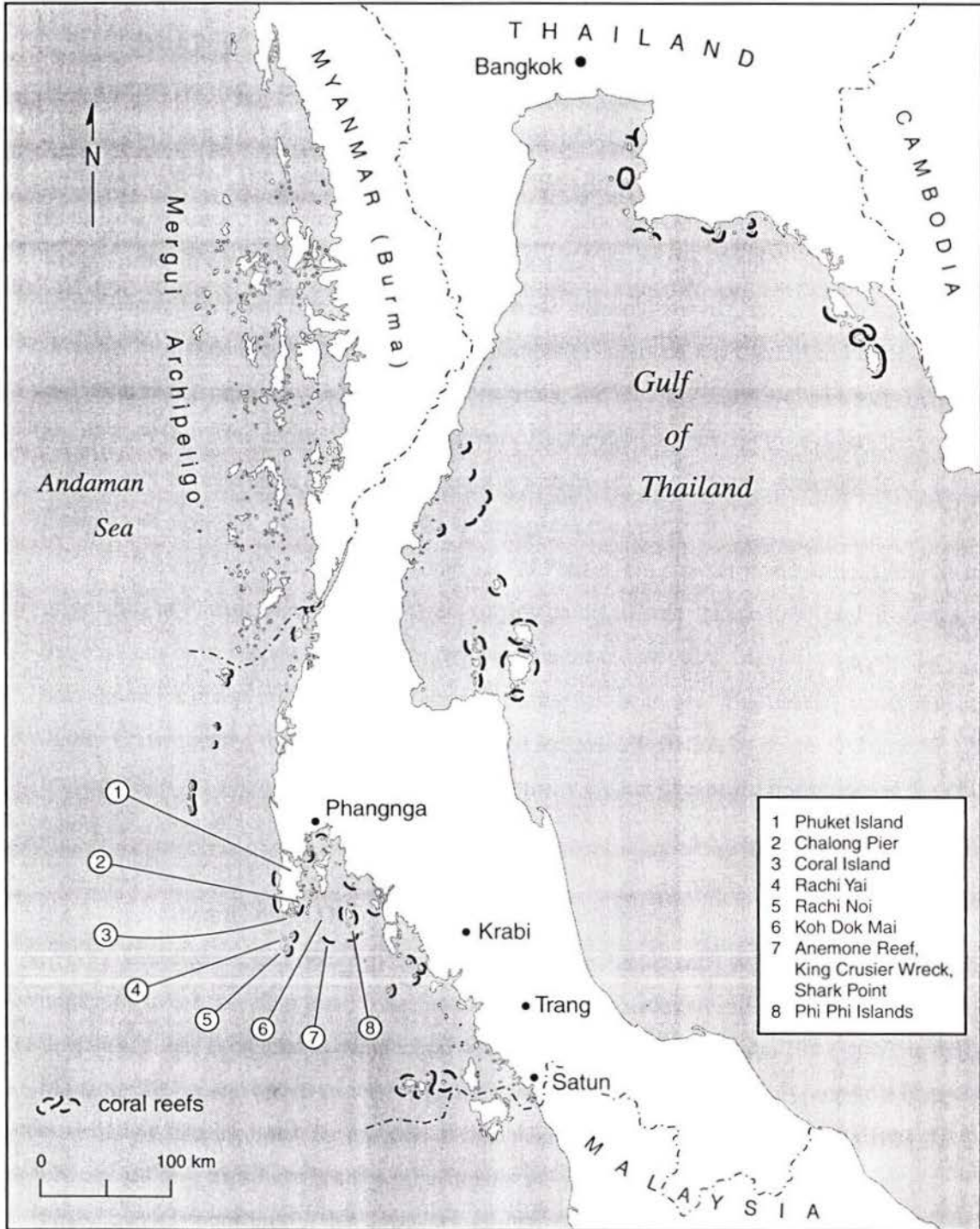
Information on dive site visitation is not available, however, it is common to encounter up to ten large dive vessels, in addition to numerous smaller crafts, at popular dive sites at a given time. When taking into consideration the large number of dive operators, vessels and divers, and the small number of dive sites accessible for day trips, it is fair to say that the local Phuket dive sites experience a fair amount of pressure. Environmental conditions at these sites vary from good to very poor, and human induced degradation, such as broken and dead coral, was evident as early as 1980 (Sudara 1981). Phuket used to have fringing reefs along its coastline that were popular with scuba divers. However, coastal development and offshore tin dredging operations have heavily affected the marine life and visibility (Lees 1999), and many of these reefs have only a small percentage of living coral cover (Sudara & Yeeman 1995).

Divers with all levels of experience frequent the day trip dive sites, however, dive courses are generally restricted to the bays of Racha Yai, a small nearby island, due to the calm waters, shallow depth, and the presence of a sandy bottom for dive lessons. Racha Yai is a popular spot for pleasure crafters and other marine tourists, and conflict between some of these groups and the divers (and snorkellers) was evident during the 2000 field season. One of Racha Yai's commonly used sites, Bungalow Bay, is a popular spot for speed boaters, who enjoy racing around the small bay at high speeds. These boats, the numerous dive boats, and the large number of other private and chartered crafts, combine to create a very risky environment for the divers and snorkellers both at and below the surface. Despite the degree of this risk, Racha Yai is one of the most popular destinations for day trips originating in Phuket, and the dive site is utilized year round. The island is presently becoming developed, which will likely impact on both the environmental and the social conditions of the coral reefs.

Racha Noi, located south of Racha Yai, was once known as a common spot for diving encounters with large marine life, including sharks and manta rays. Although such sightings have diminished in recent years, this dive site remains popular. Due to strong currents, this site is generally frequented by dive boats carrying experienced divers.

Phuket dive operators frequent Coral Island, a small island forty-five minutes south of Chalong Bay, mainly in the monsoon season, as its location provides calm dive conditions. Tourism development on the island has significantly reduced the visibility on these reefs, and many dive staff perceive them to be degraded. Still, they provide divers with a reasonably calm alternative on days when the conditions are rough at other dive sites. The island features a single

Figure 2.4. Popular Dive Sites for Day Trips



dive operation, however, several other marine tourism activities are also available. The same sites used by divers and snorkellers are also used regularly for jet-skiing, which results in safety issues and a large degree of user conflict.

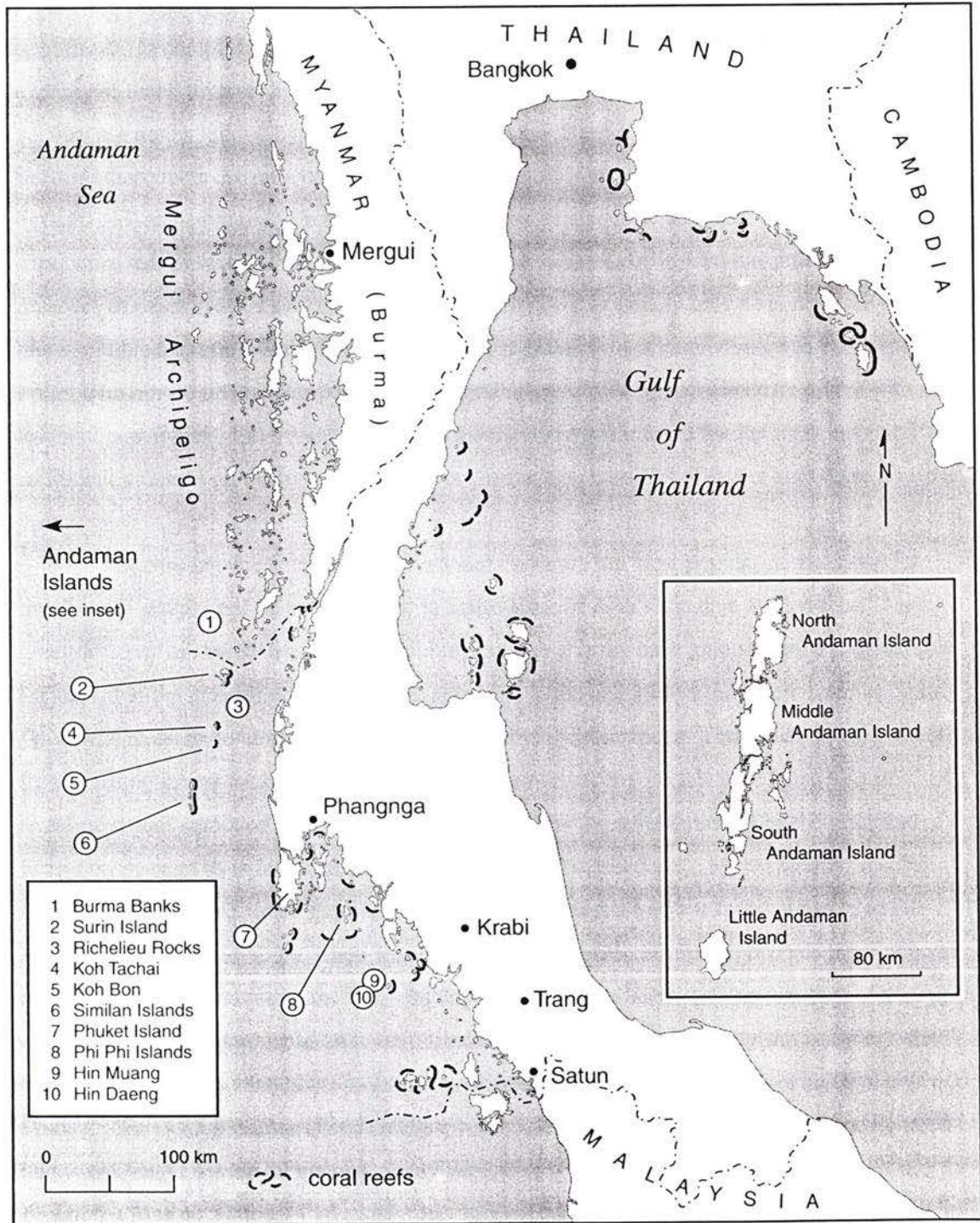
Shark Point, Anemone Reef and the King Cruiser Wreck are three popular day trip dive sites located two hours east of Phuket. The Shark Point Marine Sanctuary was designated by the Thai Department of Fisheries in 1992 based on the 'sheer profusion of marine life' present in the area (Lees 1999). The protected area includes two of the most popular day trip dive sites, Shark Point, and Anemone Reef, and extends a further 2.5 kilometres around these sites. In 1997, the King Cruiser, a car ferry operating between Phuket and the Phi Phi Islands, sunk in the waters near Anemone Reef and Shark Point. The structure was not removed, and now attracts a high diversity of marine life, and an equally large number of divers on day trips from Phuket. This site is marketed as a 'specialty' wreck dive by operators, and is rarely without divers during daylight hours. Koh Dok Mai, located between Anemone Reef and Koh Phuket, offers divers the opportunity to experience a wall dive, complete with caves. Shark Point, Anemone Reef, King Cruiser and Koh Dok Mai are visited daily throughout the year.

The Phi Phi Islands, located south east of Phuket, are popular dive locations for day trips originating in Phuket, as well as for divers staying on the islands. Home to several dive sites, these islands have become increasingly developed in the recent years. Maya Bay, a popular destination for divers and snorkellers, was the setting for the movie 'The Beach', released in early 2000. Consequently, this region has experienced increased visitation by divers and general tourists alike. In addition to the day trip crowd, many Phuket liveaboard operators use the Phi Phi Island dive sites during the monsoon season as well.

2.3.2 Liveaboard Diving Opportunities

One element that draws thousands of tourists to Phuket each year is the availability of numerous liveaboard dive trips to the Similan and Surin Islands (see figure 2.5). The term 'liveaboard' has been used in conjunction with scuba diving trips since the 1980's (White & Mahaney 1996), and means exactly what the name implies - divers actually live on the boat, essentially a floating hotel, for a period of time ranging from three days to several weeks. Liveaboard dive trips have become popular over the last decade due to the convenience, flexibility and opportunities they provide to divers. For individuals seeking an 'intense' diving experience, liveaboard excursions provide many advantages over single day dive trips.

Figure 2.5. Liveaboard Dive Sites



- 1 Burma Banks
- 2 Surin Island
- 3 Richelieu Rocks
- 4 Koh Tachai
- 5 Koh Bon
- 6 Similan Islands
- 7 Phuket Island
- 8 Phi Phi Islands
- 9 Hin Muang
- 10 Hin Daeng

0 100 km

coral reefs

North Andaman Island

Middle Andaman Island

South Andaman Island

Little Andaman Island

80 km

Essentially, the dive vessel functions as a hotel, restaurant and dive facility all in one. Life onboard the liveboards can be extremely relaxing for divers, as the crew takes care of their every need, from preparing dive equipment to developing underwater photographs. Divers have the opportunity to complete up to four dives each day, including night dives, which enables them to experience many diverse dive sites in different locations over a relatively short period of time. As they are not as limited by time, liveboards can reach reefs that the day trip boats can not. Because these reefs are protected from easy land access, they are considered to be less impacted or damaged, and essentially 'better' reefs. Liveboards also provide divers the opportunity to experience less crowded diving conditions. If a particular site is deemed unsuitable due to the presence of other boats, bad weather or strong currents, it is usually only a short journey to a more suitable location. While in previous years, liveboard trips catered more to experienced rather than novice divers, many Phuket operators are now able to accommodate divers with all levels of experience. Environmental degradation at some of the local Phuket reefs has put additional pressure on the liveboard sites, and increasing numbers of divers visit these sites each year.

The Similan and Surin Marine National Parks are the most popular destinations for liveboards and are considered by many to house some of Asia's top dive destinations. Their great diversity of marine life and beautiful underwater scenery have gained them a considerable reputation in the international dive community, and in the mid 1990's they were rated by Skin Diver Magazine to be among the world's top ten diving destinations. These islands are generally frequented by divers taking liveboard dive trips, however, one Phuket based dive operator has a liveboard boat stationed permanently near the Similans for several months of the year, and ferries passengers back and forth for several day stays by speedboat. More recently, several Phuket dive companies have acquired high-speed boats capable of transporting divers to the Similan Islands for day trips, when weather permits. This type of trip has become more popular among divers as visitation to the local day trip sites has risen, as increasing numbers of divers seek more isolated, untouched and uncrowded dive sites away from the day trip masses.

The Similan Islands are located approximately one hundred kilometres northwest of Phuket. This group of nine islands and their surrounding waters cover an area of one hundred and twenty-eight square kilometres, ninety percent of which is water. In 1982 the area was declared a Marine National Park, and it has become one of the leading attractions for visitors to Southern Thailand (Graham 1991). Protected from development by their National Park Status, these islands are essentially uninhabited aside from the fully staffed park offices and visiting tourists. Known world wide for the prolific corals, diverse marine life and stunning submarine

topography, the area has been described by the TAT as “Thailand’s most beautiful and unspoiled marine national park”(Graham 1991:89).

Not as well known as the Similan Islands, the Surin Islands are situated seventy kilometres north of the Similan Islands, approximately one hundred and sixty kilometres from Phuket, just south of the Burmese border. The five granite islands and their surrounding waters cover one hundred and thirty-five square kilometres, seventy-five percent of which is water. Declared a Marine National Park in 1981, the area is credited as having the highest quality of coral growth in Thailand (Chettamart *et al.*, 1998). The only residents of area are the park officials and a small community of sea gypsies, the Morgan people. Several popular dive sites located within the park are regularly visited by liveaboard excursions from Phuket.

In addition to the Marine National Parks, Phuket liveaboard itineraries often include numerous other dive sites. Richelieu Rock, one of the areas most well known dive trip destinations, lies fourteen kilometres east of the Surin Island group, although it is not included within the Marine National Park. Richelieu Rock has a reputation for being one of Thailand’s best dive sites due to the presence of large marine life and frequent whale shark sightings. Koh Tachai and Koh Bon, located between the Similan and Surin parks, feature a series of multi-level reefs, and in the past, have been known for frequent visits from whale sharks and manta rays.

In recent years, several Phuket dive operators have been offering trips to the Mergui Archipelago, a group of approximately eight hundred small islands off the coast of Burma. In 1997 the archipelago was opened up to foreigners for the first time in over fifty years, and most of the diving done here is by led by Phuket based operators. The area has developed a reputation for solitude. Dive staff attest that it is still possible to travel for days and not encounter signs of human presence, aside from a few small boats owned by the Morgan Sea Gypsy peoples¹. Underwater, the area’s main attractions are the large fish, namely sharks and rays. Ninety-five kilometres from the Archipelago lie the Burma Banks, a group of submerged granite seamounts, that are also a popular destination for Phuket liveaboard trips. The Andaman Islands, located in Indian territory, four hundred and fifty kilometres north-west of Phuket, offer clear waters that support a lot of large fish life. The Indian government has opened only selected locations to divers, while others remain off limits at the present time. Much of this region has been unexplored as of yet by divers, and the sites are considered to provide what divers commonly refer to as ‘virgin diving’. Increasing numbers of Phuket based operators are beginning to run

¹ Note that the same was said of the Similan Islands before the 1990’s

liveaboard trips to these Islands. One hundred and forty kilometres south of Phuket lie Hin Daeng and Hin Muang, underwater mountains within the Koh Lanta National Park. Hin Daeng, which means 'red rock', has a peak that is visible above the surface at low tide and is known for its red coloured coral. Hin Muang, or 'purple rock' is renowned for its purple coral. These dive sites are popular for their caves, deep drop-offs, manta ray and whale shark sightings.

The best time for diving in Phuket is between November and April due to the strong winds and rains of the southwest monsoon that occur in the area between May and October. However, improvements in boat technology and safety have made it possible to extend the dive season to essentially year round. Presently, trips to the local dive sites occur throughout the year, and several Phuket dive operators have boats sufficiently seaworthy to run liveaboard trips throughout the winter months, when weather permits. While increasing the length of the dive season is perceived to be good for the dive industry and the local economy, the environmental impact of this on the reefs is not clear. Year-round diving means that the marine flora and fauna may not experience a 'rest' period from the pressures and stresses that go along with diving (this will be discussed in greater detail in chapter nine). However, it is generally accepted that the presence of dive boats and divers in the Similan and Surin Marine National Parks discourages the use of these protected areas by illegal fishers². As year-round diving has only become a reality during the past few years, impacts of this situation, whether positive or negative, may not be evident for years to come.

2.4. Summary

Clearly, a wide variety of opportunities are available to divers in Phuket. Because the physical environments at the dive sites and the social environments on the dive boats are so different, liveaboard and day trips originating in Phuket provide significantly different experiences for divers. Liveaboards provide an intense dive experience over a period of several days. They give divers the opportunity to experience numerous different dive sites, often in uncrowded, undamaged conditions, and are often considered to be very relaxing. Day trips, on the other hand, offer divers the opportunity to experience one or two dive sites within a relatively short distance from Phuket, at a fraction of the cost of a liveaboard trip. The travel time to and from the dive sites is minimal, making day trips a good option for divers who experience seasickness. Day trips are also a good option for divers who are visiting Phuket with family or friends who are non-divers, as individuals are free to spend their evenings as they wish. Divers

² The presence of fishing boats within the Similan and Surin parks, however, was noted regularly by numerous Phuket dive operators.

have the opportunity to take any number of day trips, and can choose to intersperse their diving days with other activities as a part of a whole vacation. The scuba diving literature (see Davis *et al.*, 1996, Moscardo 1999) suggests that divers select a particular type of trip with the benefits and opportunities provided in mind. Recreation specialization theory suggests that divers with different backgrounds and experiences will be motivated to partake in specific types of activities, and inevitably will experience varying levels of satisfaction with such activities based on their personal characteristics and level of specialization.

Because of the different nature of the sites utilized for the day trips and the liveaboard trips, the issues surrounding these sites are also different. When considering the amount and type of pressure facing the dive sites, as well as the degree of protected area status, different types of management actions and responses are required for the various sites.

While specific strategies are required for the effective management of the various dive environments, a variety of strategies that ensure the provision of satisfying dive experiences for all types of divers is also necessary for the industry to be sustainable. It is necessary to identify the features that divers desire in a diving experience, and understand how well the Phuket experience satisfied their expectations for these strategies to be developed. Chapter three outlines the research methods and techniques used to obtain this information.

2.5. Discussion: The Current Status of the Industry and the Dive Operators Club of Thailand.

Presently home to more than eighty-five dive companies, the Phuket dive industry continues to evolve. The industry experiences constant restructuring, as companies split, merge with other dive operations, relocate and acquire new names, dive vessels and management staff. New dive centres are continually established to replace those who failed to survive the previous season, while in lieu of disbanding completely, other operators discontinue their own trips to act as low capital 'booking agents' for other dive companies. With such a large number of interests operating on this moderately sized island, conflict within the industry is a fact of life, and the diving 'community' has long been known for its bitter competitiveness and rivalry.

As the industry has grown during the past decade, the lack of unity, cooperation and trade association within the dive community has become an increasingly serious problem. Members of the industry felt that this competition and lack of cohesiveness weakened the industry politically and prevented the widespread adoption of adequate and effective conservation initiatives. They believe that these issues have contributed to diminishing environmental quality, which ultimately threatens the sustainability of the industry. During the 2000 field season, the 'Dive Operators Club of Thailand' (DOCT) was formed by a handful of operators, in part to represent the Phuket

dive industry politically, and in part to take on the task of setting professional standards for dive centres throughout Thailand (DOCT 2000). Goals of the club include active involvement in coastal resource management and protection, improved and unified communication with government organizations and authorities, increased collaboration with conservation groups and NGOs and increased communication and cooperation within the industry itself. Membership in the club requires that operators operate legally, and hold all the necessary government permits and licenses. Presently approximately half of the Phuket area operators (including the majority of the large and influential companies) have joined. Members of this organization aim to continue working toward achieving a sustainable industry, and some progress has been made. Numerous projects are currently underway, and achievements during the past two years include:

- Improved communication and cooperation between the National Marine Park staff and the diving community:
 - DOCT members are working with the park staff to monitor and prevent illegal fishing and garbage dumping at the dive sites.
 - A program designed to contribute to reef protection by providing park staff with free dive training and certification is underway. (Although adopted by the DOCT, this program was initiated prior to the formation of the club by a University of Victoria researcher [see Theberge 2002]).

- Improved communication and cooperation between the Thai Government and the diving community:
 - The DOCT has been recruiting Thai Nationals to work as dive masters and instructors in the industry. In the past, comparatively few Thai citizens have learned to dive, and even fewer have obtained advanced level dive certifications. As a result, the dive industry has been almost totally dependent on foreign dive masters and instructors to meet their staffing needs. As the demand for foreign staff has risen, dive operators have experienced escalating conflict with the Thai authorities over the issue of work permits. The authorities feel that the division of labour within the dive industry is unjust, and does not serve the Thai citizens (who work at the low paying, 'menial' jobs, such as cook or boat crew) to the degree it does the foreigners (who receive the comparatively well paid dive master and instructor positions). The authorities feel that many of the positions currently occupied by foreigners should be filled by Thai citizens, and consequently, they have refused to provide the dive operators with an

adequate number of work permits for their foreign staff. This has resulted in on-going discord, and numerous dive staff members have been arrested and imprisoned for working without legal documentation and work permits. The DOCT has maintained that they have no choice but to employ foreign staff due to the shortage of bilingual, qualified Thai dive masters and instructors. Since the inception of the DOCT, club members and the Thai immigration authorities, in conjunction with the TAT have worked out a compromise. Dive staff may not obtain work permits providing that each individual provides free dive training and apprenticeship to a Thai citizen, up to the level of 'Dive Master'. Although the DOCT continues to recruit Thai Nationals, comparatively few Thai citizens have expressed interest in a career in the dive industry, and thus, many dive staff continue to work illegally.

- Improved communication and cooperation within the dive industry:
 - The DOCT has organized dive sites cleanups and the maintenance of mooring buoys at certain day trip and liveaboard sites.
 - The DOCT has encouraged their members to voluntarily install septic tanks on all dive vessels.

- Improved cooperation between the dive industry and local NGOs (such as the Reef World Foundation)
 - The DOCT is cooperating with a local reef NGO to collect and disburse data on whale shark sightings in the region.
 - In conjunction with a local conservation NGO, the dive industry is participating in programs designed to introduce disadvantaged children to the marine environment.

Thus, the Dive Operators Club of Thailand has initiated several projects that will inevitably benefit the Phuket dive industry and their related counterparts. The potential for this club to play an important role in ensuring the sustainability of this industry is great, however, increased and focused efforts are clearly required. This will be discussed later in the thesis.

Chapter 3. METHODS

This chapter outlines the research design, survey design, sampling methods, data collection and data analysis techniques used in this study. The primary data collection technique used was a questionnaire survey of divers in Phuket, Thailand. Structured and unstructured interviews with dive operators and staff, the observation of dive staff and divers, and secondary data sources were also used where appropriate, to provide both breadth and depth to the research.

3.1. Research Design - Background Information

Tourism motivation is an important concept in the study of tourist behavior. Different individuals choose to participate in activities for various reasons, and the study of these reasons is central to the understanding of tourist behavior and for the creation of effective recreation opportunities (Mitra & Lankford 1999). Understanding what motivates people to choose a travel destination, what they expect to experience during their visit, and their level of satisfaction following their trip is necessary for planning and executing a sustainable tourism operation.

Because the goal of visitor research is to assess the attitudes and the perceptions of the visitors, there is little other alternative than to ask people to share such information about themselves (Jackson 1988). Various methods have been suggested for determining visitor motivation, expectation and satisfaction in relation to particular outdoor activities and settings. These include personal interviews, focus group interviews and self-administered questionnaire surveys (Masberg & Saviege 1996; Veal 1997). Each method has advantages and disadvantages, and choosing the most appropriate method for collecting detailed tourist data requires certain compromises (Mitra & Lankford 1999). While personal interviews and focus groups provide a more complete understanding of visitor's characteristics because they allow responses to be explored and probed in depth, such methods involve significant costs in time and effort for both data collection and data analysis. Personal and focus group interviews tend to be limited to small sample sizes and relatively few research questions. Self administered questionnaire surveys allow a much larger sample size and range of questions to be addressed, and permit the use of detailed response scales and checklists. When carefully supervised, this type of instrument is believed to obtain the most reliable and thorough responses, as the respondents have the opportunity to review their completed questionnaires, or re-visit questions that are not answered initially (Kozak 2001). Still, in comparison to other methods, a corresponding loss in the richness of the data generally occurs.

Self-administered surveys usually involve providing visitors with a questionnaire on their arrival to a specific site, and collecting them upon their departure (Mitra & Lankford 1999). Unless carefully supervised, this technique can have several weaknesses, including a poor standard of completion and a low response rate, which can be a source of serious bias, as those who choose to reply may be unrepresentative of the population as a whole. Close contact and supervision by the researcher can help to mitigate these weaknesses. Questionnaires that have been explained to the respondents and are handed to them in person are likely to generate higher response rates (Jackson 1988). Additionally, when the researcher is present during the completion of the survey, any questions the respondent has can be answered immediately. The greater the personal contact in survey research, the greater the response rate (Jackson 1988).

3.2. The Questionnaire Survey

An important goal of this research project is to understand the attitudes, perceptions and characteristics of the people who travel to Phuket for diving and are served by the local dive community. The self-completion questionnaire format was chosen to gather data on the divers' expectations and satisfactions. Because an important objective of this project was to compare diver motivations and expectations with diver satisfactions, the 'before and after' survey format was selected. Before and after surveys allow researchers the opportunity to measure change, and offer the best opportunity to compare pre-trip motivations with visitor satisfactions following the recreation experience (Mitra & Lankford 1999).

3.2.1. Questionnaire Design

A structured questionnaire was prepared following consideration of the study objectives and an assessment of the information needs. An examination of the relevant literature in a variety of subject areas including marine and dive tourism, diving impacts, leisure motivations, visitor satisfactions, recreation specialization, ecotourism, Thailand, carrying capacity and survey design was undertaken and an initial set of variables was developed. The resulting survey questions will be discussed below. The booklet style surveys were designed according to the Dillman Total Design Method, which has been proven to result in improved response rates, as well as improved response quality (Salant & Dillman 1994).

The questionnaires contained several categories. A combination of open and closed-ended questions were used to elicit responses from divers on their expectations, motivations, satisfactions, perception of impacts, and demographic characteristics. Motivations and satisfactions were determined by having the survey respondents indicate the importance of, and

satisfaction with, various dive trip features on a five-point Likert-type scale. Additional information was gathered using multiple response checklists, importance ranking, open-ended and direct questions. Ease of completion was considered to be an important factor in the design of the survey, in order to increase the participants' understanding of the questions, and encourage them to complete the survey in its entirety. The pre and post dive surveys are included as Appendix I.

The 'before-dive' survey contained thirty-six questions, divided into six distinct sections, each designed to measure different motivational, experiential and demographic characteristics. The first section asked divers about their trip plans, including when and how they booked their dive trip, how long their dive trip would be, and how important diving was in their decision to visit Phuket. The goal of this section was to identify how diving fit into the participants overall vacation plans.

The second section was used to identify the motives that people have for diving, and highlight some of the needs that they are striving to fulfill by participating in this sport. This section presented divers with a list of possible reasons for participating in scuba diving. The list was compiled from a review of the scuba diving and leisure motivation literature. Divers were asked to indicate how important each reason was in their decision to participate in diving, using a five-point scale ranging from 'not at all' to 'extremely'. Divers were also provided with a list of possible reasons for diving in Phuket, and asked to indicate the importance of each to them, using the same importance scale mentioned above.

Section three of the survey was used to identify the features that divers desire and value in their dive trip, and highlight their trip expectations. Divers were provided with lists of environment / setting features, and service features that they might experience on their trip. These lists were compiled from a review of the dive literature, and included a range of different conditions and features identified as being important aspects of the dive experience. Divers were asked how important each of these features would be to their enjoyment of their dive trip, on a five-point scale ranging from 'not at all' to 'extremely important'. Divers were then asked to rank the two environment/setting and service features most important to their enjoyment of their trip.

The fourth section dealt with the divers' perception of impacts on the reef environment. A list of possible diving impacts was compiled from the relevant literature. The list included both positive impacts (e.g. educating divers and providing economic support for reef conservation), and negative impacts (e.g. anchor damage and a negative impact on water quality). Divers were asked to indicate the extent to which they felt each impact effects the reef environment. The five-

point scale ranged from 'strongly disagree' to 'strongly agree'. Divers were also questioned about the overall impact that diving has on the reef, on a scale that ranged from 'very negative' to 'very positive'.

The fifth section of the survey was designed to gather information on the diver's degree of commitment to diving and their level of involvement in the sport. Respondents were asked about their previous dive experience, including their length of time as a certified diver, how often they dive, their financial investment in dive equipment and the other locations in which they have been diving. To allow the financial impact of this sport to be calculated, divers were also asked to indicate their expenditures during their stay in Thailand. Both open ended questions and check lists were used in this section.

The final section asked about demographic characteristics including gender, age and nationality. Following this section was an open-ended question that asked 'Is there anything else you would like to tell us about your hopes or expectations for this dive trip?' Divers were provided with a full page on which to provide additional information.

The 'after-dive' survey contained twenty-three questions organized into five separate sections. This survey collected information on the diver's satisfaction with various aspects of the dive trip and the perceived impacts on the environment caused by their dive trip. The first section asked divers to indicate their overall satisfaction with their Phuket dive experience, on a ten-point scale, and in comparison to both their expectations and their previous experiences. Divers were also asked to name the dive sites they visited during their trip.

Section two provided the list of potential motivations for participating in scuba diving that was contained in the pre-dive survey, and asked divers to indicate their level of satisfaction with each on a five-point scale, ranging from 'very unsatisfied' to 'very satisfied'. This was designed to assess how well the trip lived up to the diver's expectations and satisfied the needs they sought to fulfill. This section also included an open-ended question that asked 'Did you experience anything on this trip that made it better or worse than you wanted it to be?' This allowed divers to express their thoughts on the experience, both positive and negative, before they were asked to respond to a series of related closed-ended questions in section three.

The third section of the post-dive survey presented divers with the lists of environment/setting and service features that were provided on the pre-dive survey. These lists were used to measure specific aspects of the experience. Respondents were asked to indicate their satisfaction with each individual feature, on a five-point scale, ranging from 'very unsatisfied' to 'very satisfied'. Divers were also asked to rank the two environment / setting and two service features that most satisfied their expectations.

Section four dealt with the impacts of diving on the reef. Divers were presented with the lists of potential impacts included in the pre-dive survey. They were asked to indicate the degree to which they agreed with the potential for such impacts, on a five-point scale that ranged from 'strongly disagree' to 'strongly agree'. Divers were then asked their perception of the impact of diving on the reef overall, on a scale that ranged from 'very negative' to 'very positive'. A 'not sure' category was present in both of these scales. Section four also asked divers whether they viewed members of their dive group causing negative impacts to the reef environment.

The final section of the survey dealt with the dive sites. Divers were asked to comment on the quality of the dive sites, and on any impacts they observed. Information on the divers' interest in future conservation projects, and their interest in returning to the region for diving were posed. Divers were also provided with a page on which to comment on any additional aspect of their Phuket dive trip.

Both the pre and post dive surveys requested participants to provide either their first name or an alias to facilitate the pairing of before and after surveys; the names were removed when the corresponding surveys were joined. On the rare occasion that participants did not include their name on one of the surveys, it was possible to match up the pre and post dive surveys based on hand writing alone.

A pre-test of the survey was done to determine the ease of understanding and check the wording of the questions. The first draft of the questionnaire was pre-tested among twelve divers and six dive operators in Phuket in January of 2000. While the operators reviewed the survey draft at their respective offices, the divers completed the questionnaire under actual survey conditions. Participants in the pre-test included both native English speakers and individuals for whom English was a second language. A panel of academics also reviewed the draft. In light of practical observations and findings from these surveys, several minor changes were made. Questions that caused confusion were altered, and those that provided unnecessary information were removed. The pre-test also allowed possible responses to be written into the questionnaire, facilitating the ease of completion and subsequently, data entry.

The survey instrument was originally designed in English, and was later translated into German and Japanese by native speaking members of the dive industry. Phuket is an international dive holiday destination, and while most of the divers in the area appeared to be proficient and comfortable speaking English, this was not the case for everyone. Care was taken to ensure that these particular divers were not excluded from the study.

3.2.2. Sampling Methods

For most research studies, it is not realistically feasible to survey all members of a given population due to the logistical constraints imposed by the time and money available for data collection. Thus, it is necessary to take a 'sample' of the population in order to obtain the required information. In probability sampling, all members of the population have an equal chance of being included in the sample, which is chosen through random selection. Although this method is the preferred approach to sampling because the results are most likely to be representative of the population, it is often unrealistic due to the time and costs required. When probability sampling is not possible, non-probability sampling is an alternative. A major weakness of non-probability sampling is the fact that all possible respondents do not have an equal chance of being chosen for the study. Thus, the subsequent sample is not necessarily representative of the population as a whole. To minimize this, every effort is made to be 'representative' even though random techniques are not used, and in many cases, a non-probability sample closely mimics a random sample. Thus, non-probability sampling often produces samples that are very similar to probability sample data, to the extent that they can be compared (Fowler 1993: 51). With careful attention to sampling methods and the use of good judgement, it is possible to mitigate some of the 'sampling error' inherent in non-probability sampling (Harron 1991).

This study was conducted in Phuket, Thailand from January to June 2000. Of the more than eighty commercial dive operators located on the island of Phuket, fifteen were involved in this research project. In selecting these fifteen operators, great care was taken to ensure that the full range of the opportunities available to divers in Phuket was represented, as was the type of clientele served. To facilitate the collection of a representative sample of divers, it was important to select companies that catered to a wide variety of divers and featured both diverse and typical diving opportunities. Factors such as the price, type and length of dive trip offered, the size and type of dive boat, the range of on-boat services, the dive locations visited, and any special dive trip features were considered in the selection process.

The managers of seventeen dive companies were approached and offered the opportunity to participate in this research project. Managers from fifteen companies accepted the opportunity to participate and granted the researcher access to their boats, staff and customers. Managers from two dive companies declined to participate. Once permission from management was obtained, the researcher made contact with the dive staff of each company to explain the objectives and the process of the research project and ask for assistance. With few exceptions, the staff members were willing to provide assistance as required.

Survey respondents were passengers on one of the selected tour boats that visited reef sites in the local waters surrounding Phuket or dive sites in the Andaman Sea. This study was restricted to divers eighteen years of age and older. A total of six hundred and thirty-two divers completed the survey. Of the divers surveyed, seventy-five percent completed both the pre-dive and post-dive surveys (four hundred and seventy-three individuals), seventeen percent (one hundred and six individuals) completed the pre-dive survey only, and eight percent (fifty-one individuals) completed the post-dive survey only. Data on the number of divers in Phuket each year does not exist, however, unofficial estimates begin at 100 000. Based on a population size of between one hundred thousand and one million, the sample size allows the researcher to be ninety five percent confident (50/50 split, or a relatively varied population) that the results will have a sampling error of no more than plus or minus five percent. In other words, given the sample size, and assuming the sample closely mimics a random sample, the researcher can be confident that nineteen times out of twenty (ninety-five percent of the time), the findings will be accurate to within plus or minus five percent.

The surveys were completed on single day dive trips and multi-day liveaboard dive trips between January and June 2000. The surveys were distributed to divers in various ways and the methods differed between trip types. Divers on day trips were individually approached by the researcher as the boat traveled to the first dive site. Following an explanation of the project and the time commitment required, divers were asked to complete a survey. Pre-dive surveys were distributed and collected upon completion. The satisfaction literature stresses the importance of measuring satisfaction immediately after the experience (Duke & Persia 1996; Kozak 2001), and following the final dive of the day, the post-dive surveys were distributed and collected by the researcher. The before and after surveys for each diver were then matched up for later analysis. Non-English speaking divers were provided with a typed letter explaining the research process. Additionally, with only one exception, the researcher was able to recruit a bilingual dive staff member to translate any questions that the divers had. The researcher attended thirty-one day trips with the various dive operators, to various dive sites through the research period. A total of two hundred and forty six individuals participated in the survey during these trips.

Because the liveaboard dive trips each spent between three and ten days away from Phuket, it was not possible for the researcher to personally conduct the surveys with liveaboard divers. Consequently, contact was made with dive staff members on each of the selected dive boats. The research objectives and survey process were fully explained and willing individuals were enlisted to assist in data collection. The researcher obtained a copy of each boat's schedule at the beginning of the field season, and met with the specific staff members at the dive shop or at

the boat dock prior to each sailing to provide enough surveys for the trip passengers. Survey materials, including the actual questionnaires in the required languages, letters of explanation for the divers, pens and large collection envelopes were given to dive staff in waterproof zip-lock bags. These staff members distributed the surveys to divers at the beginning and end of each dive trip. Because they had been fully briefed on the project by the researcher, they were able to answer questions that the divers had about the project. Completed surveys were placed in the large collection envelopes upon completion, and the envelopes were sealed and returned to the researcher. Following each liveboard trip, the researcher met with the dive staff members at the dive shop or boat dock to collect the completed surveys. The surveys were distributed on fifty-one liveboard dive trips, and completed by three hundred and eighty-six divers.

Although full participation in this research project required upwards of thirty-five minutes of the diver's time (approximately twenty minutes to complete the pre-dive survey, fifteen minutes to complete the post-dive survey), this was not considered problematic by the divers. Transit time to and from the dive sites was at least one and one half hours each way, and the surveys required only a fraction of this time. A small number of divers declined to participate in this study. Generally, these divers were involved in diving instruction on the boat and did not have time to participate, or were suffering from seasickness. On three occasions, divers refused to complete the survey because they disapproved of one of the funding sources (PADI Project AWARE). For example, one diver dismissed this source as 'A pawn to make PADI look like a nice, environmentally responsible organization'. The response rate for this survey is not available, as not all of the dive personnel recorded the number of surveys they distributed.

3.2.3. Limitations

The aim of this sampling procedure was to gather information from a sample that was representative of the Phuket diving population. It is important to make note of some limitations to this representativeness.

The surveys were conducted in English, German and Japanese. Divers that were not proficient in one of these languages are not represented by this sample. When discussing the representativeness of a survey sample, it is necessary to consider the timing of the data collection. Generally, the 'high season' for diving in Phuket occurs from November to April, while the 'low season' runs from May to October. Surveys were collected over a six month period that included both the 'high season' (January to April), and the 'low season' (May and June). However, representation from divers who visit Phuket for diving between July and December is lacking.

Also of importance is the lack of consistency in the survey methods. While it would have been ideal to have the researcher distribute and collect the surveys from all respondents on both types of dive trips, this was not feasible due to the length of the liveaboard trips and the sample size required. That fact that numerous different individuals distributed the surveys may be a significant limitation.

Logistically, it would have been extremely difficult to implement probability testing for this project due to the sheer size and scope of the dive industry. While the sampling methods undertaken for this research can not guarantee, with absolute certainty, the representativeness of the sample, the attention to detail used in the selection of representative opportunities and the breadth of the selection do strengthen the claim that the sample gathered is a valid representation of the Phuket diving clientele. Still, care should be taken when generalizing the data obtained beyond the Phuket dive industry, and these results should only be applied to other dive destinations with caution.

3.3. Personal Interviews

In order to obtain information on the size, growth and supply of opportunities within the Phuket dive tourism industry, and the various issues surrounding the industry, personal interviews were conducted with members of the local dive community, including dive shop owners, managers and staff. These individuals had the opportunity to witness the evolution of diving in Phuket, and could attest to the changes and resulting impacts that have occurred over time. They were able to provide insight and information on the events and influences that govern the dive industry, that are often not evident on the surface, such as political issues, industry dynamics and power structures. Interviews are commonly used in tourism and leisure research as they allow for the collection of detailed information and can provide researchers with a comprehensive understanding of complex issues from a variety of perspectives (Henderson 1991). Because personal interviews require face-to-face interaction between the researcher and 'subject', this technique can facilitate cooperation in other aspects of the research project, particularly where a variety of data collection methods are used (Henderson 1991).

Given the competitive climate of the Phuket dive industry and the on-going 'political' issues, it was felt that interview subjects would not respond favorably to highly structured and formal interviews. It is for this reason that the non-scheduled, standardized interview method was selected. While this type of interview allows a large number of questions to be posed to each respondent, the questions are asked in different ways and sequences, and questions may be altered to suit specific situations (Mitra & Lankford 1999). Numerous individuals, including dive shop

and dive boat owners/managers, dive masters and instructors, boat crew, and members of local environmental agencies were informally interviewed. Early fieldwork revealed that many of these people were hesitant to discuss particular issues with people they did not know or trust. Consequently, once rapport was established between the researcher and the individuals, on-going interviews, interactions, or 'guided conversations' were conducted throughout the remainder of the field season.

While non-scheduled interviews can provide a wealth of information with a large amount of detail, they are also likely to introduce a greater degree of bias than would be present in scheduled, structured interviews (Veal 1997, Mitra & Lankford 1999). The quality of the information received during personal interviews is dependent on the cooperation and honesty of the interviewee. Because many of the interviews took place with individuals for whom English is not the first language, misinterpretation of such data by the researcher is entirely possible. For this reason, every effort to clarify and confirm the intent of questionable responses was taken. Still, these may be limitations to the data collected during such interactions, and care must be taken when drawing conclusions based on the data obtained in this manner.

3.4. Secondary Data Collection

Secondary data were obtained from the Tourism Authority of Thailand. These data provided information on visitor arrivals in Thailand and Phuket over the past four decades. Information on the development of the tourism industry and dive tourism industry in Phuket was also collected from a variety of sources, including guide and dive books, dive travel and diver education magazines, and local newspapers.

3.5. Data Processing

The data from the pre-coded surveys were entered for analysis using the Statistical Package for the Social Sciences (SPSS) computer software. Numerous data checks were conducted to ensure consistent data entry and accurate data computations. Analysis of the information provided by the divers was predominantly undertaken using three statistical tests: the chi-squared test, the t-test, and the analysis of variance (ANOVA) procedure. The chi-squared test was used to compare categorical variables and determine whether significant differences existed between various groups. Independent sample t-tests were used to compare the mean scores of two groups, thus highlighting significant differences between groups. Because the same people were surveyed twice, paired sample t-tests compared the pre and post mean scores for individuals to highlight changes that occurred over the course of the dive trip. Finally, the

ANOVA test was used to compare the means of three or more groups to identify whether attitudes and perceptions differ between the groups. Throughout the thesis, a probability level of .05 was used to judge statistical significant unless otherwise stated. Details are included in each result chapter as required.

Chapter 4. RESULTS: A PROFILE OF DIVERS AND DIVING IN PHUKET

The overall goal of this research project is to provide recommendations to resource and dive industry managers in Phuket, Thailand that will ensure the provision of positive diver experiences while contributing to the sustainability of the dive industry. To facilitate this, it is necessary to understand the scuba diving industry in Phuket, both in terms of the divers who visit the region and the dive operations who service them. This section summarizes the descriptive results from the diver survey and helps place later analyses in context¹. Because of the different opportunities and experiences provided on the liveaboard and single day dive trips (discussed in chapter three), comparisons between divers on the two types of trips have been made to highlight differences.

4.1. Diver Characteristics- Who Are the Divers?

4.1.1. Gender

The survey respondents were sixty-four percent male and thirty-six percent female. These results are similar to data published elsewhere on scuba divers and tourist data collected by the Tourism Authority of Thailand (TAT 2001). *Skin Diver*, the world's largest scuba and snorkeling magazine, completed a subscriber survey in 1996, and found that sixty-six percent of their subscribers were male and thirty-four percent were female. At the time, this was considered a representative sample of divers, however, at other dive tourism destinations, the sport is clearly male dominated, with up to eighty percent of divers being men (Tabata 1990; Davis *et al.*, 1996; Mundet & Ribera 2001). The largest dive training organization, PADI (Professional Association of Dive Instructors), suggests that throughout the world, seventy-two percent of divers are male and twenty-eight percent are female (PADI 2001). The TAT has collected detailed information on tourist arrivals each year since the late 1980's. During 2000, they found that sixty percent of tourists to Thailand were male and forty percent were female, while a decade earlier, sixty-six percent of visitors were male and thirty-four percent were female (TAT 2000). Without exception, every dive operator interviewed for this project indicated that a change in the gender distribution of divers has been occurring over the past five years, with female divers being much more common today than in previous years. Although no consolidated data specific to the dive industry exists, several long term dive operators estimate that in the early 1990's, the dive clientele was eighty percent male and twenty percent female. They suggest that the gender ratio

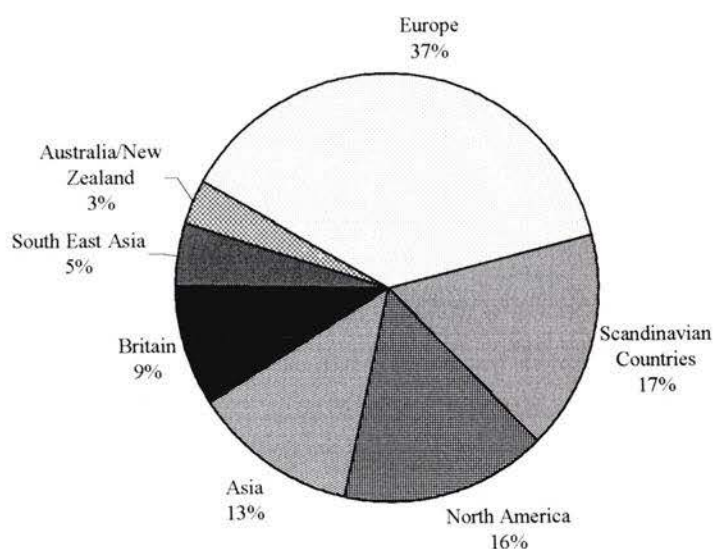
¹ The complete descriptive analysis is included in Appendix 2 for reference, while additional survey comments are included in Appendix 3.

has changed as tourism activities have diversified on the island and as Phuket has become more popular as a family holiday resort.

4.1.2. Nationality

Phuket is a well-known dive holiday destination that caters to an international clientele. Because many of the dive operators accommodate divers of specific nationalities, a variety of companies were selected to ensure an appropriate sample of diver nationalities was obtained. Survey respondents came from forty countries, which have been collapsed into seven general regions (figure 4.1). Phuket clearly has the capacity to attract divers from around the world, as do other popular dive tourism resorts such as the Cayman Islands and Australia's Great Barrier Reef (e.g. see Moscardo 1996, Tratalos & Austin 2001).

Figure 4.1. The Nationality of Survey Respondents

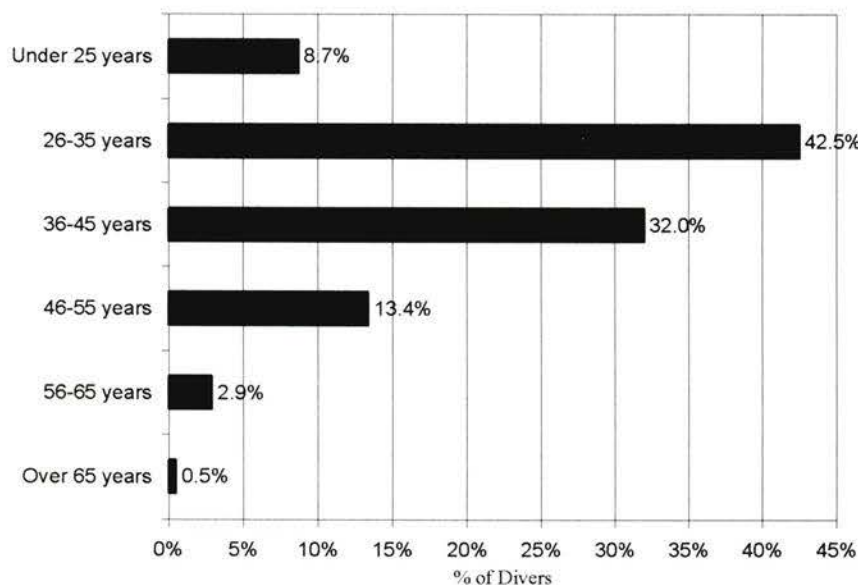


4.1.3. Age

Previous research studies found that while individuals of all age groups partake in diving, certain cohorts, particularly the twenty-five to forty-five year range, were more likely than others to participate in the sport (Davis *et al.*, 1996; Skin Diver 1996; Mundet & Ribera 2001). The age distribution of Phuket divers is consistent with these statistics. Three quarters of divers who completed the survey were between the ages of twenty-six and forty-five at the time of the survey (figure 4.2). Interestingly, the TAT found that of all visitors to Thailand during 2000, only fifty percent fell into this age category. Clearly, diving is an activity that appeals to reasonably young, active individuals

Significant differences in the age distribution of liveaboard and day trip divers exist, with liveaboard divers being somewhat older. Twenty-two percent of liveaboard divers are older than forty-six years, compared to eight percent of day trip divers ($\chi^2=23.450$, $df=5$, $sig=.000$). This may relate to income, as the cost of the liveaboard trips is significantly higher than the cost of the day trips. Older divers are more likely to be in a higher income bracket and therefore more able to afford a high-priced trip.

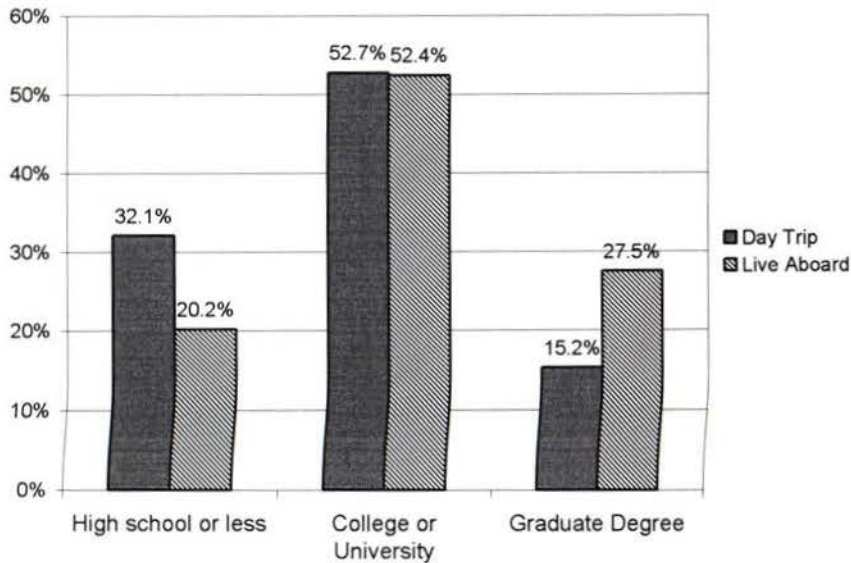
Figure 4.2. Age Distribution of Divers



4.1.4. Education

Previous studies have indicated that divers are highly educated individuals, the majority of whom hold degree or diploma qualifications (Tabata 1990; Davis *et al.*, 1996; Skin Diver 1996; Mundet & Ribera 2001; PADI 2002) Phuket divers are no different; Seventy-three percent of the divers surveyed attended college or university. Half of Phuket divers have an undergraduate degree, and one quarter have a graduate level degree or professional certification (for example, a medical, dentistry or law degree). Liveaboard divers are more likely than day trip divers to have achieved a graduate level degree ($\chi^2=24.596$, $df=6$, $sig=.000$) (figure 4.3). It is possible that highly educated divers are in a higher income bracket, which may make them more able than less educated individuals to afford the expense of a liveaboard trip. Also, liveaboard divers are slightly older than day trip divers, many of whom might still be in the process of completing their education.

Figure 4.3. Highest Level Of Education Obtained
A Comparison Of Day Trip And Liveboard Divers



4.1.5. Previous Diving Experience

Survey respondents had a variety of dive experience in terms of the level of dive certification they had obtained, their length of time as a certified diver, and the number of dives completed in the two years prior to the survey. Almost ninety percent of the divers surveyed had completed the basic level dive course, 'Open Water Diver', and more than half had obtained advanced level qualifications (table 4.1). These findings are consistent with the diving literature, which suggests that a good proportion of divers have considerable knowledge of the sport (Tabata 1992; Skin Diver 1996).

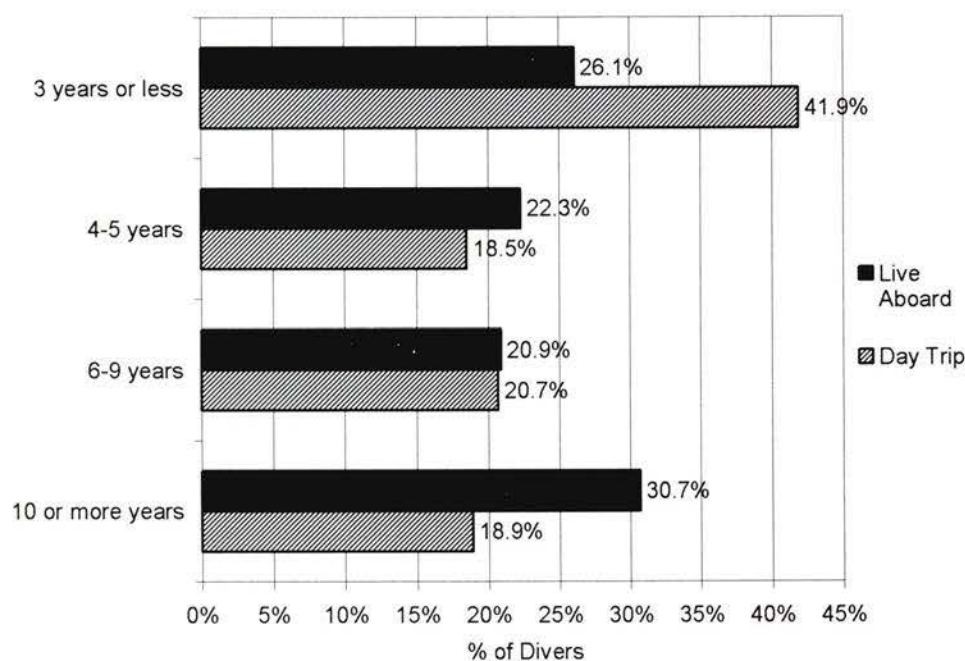
Table 4.1. Current Level of Dive Certification- Summary

Level of Certification	Percent of Divers Certified
Open Water	88.9
Advanced Open Water	56.1
Rescue Diver	23.5
Dive Master	13.8
Instructor	6.6
Other	19.9*

*Total exceeds 100% due to multiple response. Due to the variation in the upper level certification courses for the various dive training agencies (PADI, NAUI, CMAS etc), not all responses are included in this analysis.

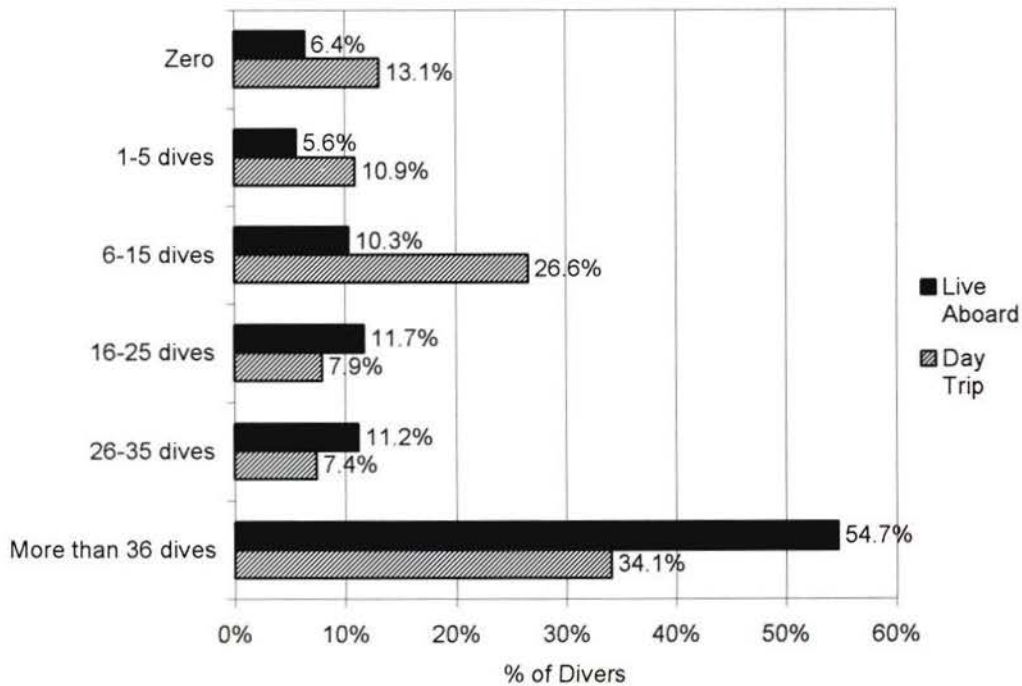
Because of the recent and rapid growth of recreational diving, previous studies have found that the majority of active divers have been diving for less than ten years. Divers surveyed in Phuket had been certified divers for an average of 7.5 years, with significant differences evident based on trip type. On average, liveaboard divers had been certified 8.28 years, while day trip divers had been certified for 6.29 years ($\chi^2=19.002$, $df=5$, $sig=.002$) (figure 4.4). A possible explanation for this is that the longer divers are certified, the more committed they may become to diving, which could lead to increased interest in undertaking new types of dive experiences (e.g. a liveaboard dive trip).

Figure 4.4. Length Of Time As A Certified Diver
A Comparison Of Day Trip And Liveaboard Divers



Almost half (forty-seven percent) of the divers surveyed had completed more than thirty-five dives in the two years preceding the survey. A significant difference in the number of dives completed by liveaboard and day trip divers was evident. It appears that individuals taking liveaboard trips were more active divers in the years prior to the survey ($\chi^2=51.178$, $df=5$, $sig=000$) (figure 4.5). Again, it appears that divers who take liveaboard trips are more committed divers who are perhaps seeking a more intense dive experience than are those taking day trips.

Figure 4.5. Number Of Dives In The Past Two Years
A Comparison Of Day Trip And Liveaboard Divers



Of the divers surveyed, twenty-nine percent were involved in a dive club in their home country. Liveaboard divers (thirty-five percent) were more likely than day trip divers (twenty-two percent) to be dive club members ($\chi^2=9.456$, $df=1$, $sig=.002$). Discussions with divers during the 2000 field season revealed that many dive clubs are responsible for promoting and organizing liveaboard trips for their members to various dive tourism locations throughout the world. While thirty-two percent of respondents subscribe to at least one dive magazine, liveaboard divers (thirty-seven percent) were more likely to subscribe than day trip divers (twenty-five percent) ($\chi^2=8.696$, $df=2$, $sig=.003$). These results support the suggestion that divers who take liveaboard trips are more involved in the sport.

4.1.6. Investment in Dive Equipment

In terms of dive travel, certification and equipment, diving has a reputation for being an expensive sport. Eighty eight percent of divers surveyed owned some form of dive gear (table 4.2). The total average investment in dive gear per respondent is \$2369 (median=\$1600, mode=\$2000).

Table 4.2. Dive Gear Ownership

Type of Equipment	Percent of Divers Who Own
mask, snorkel, fins	86.7
regulator, gauges	62.2
BCD	62.1
dive computer	60.5
flashlight	52.6
knife	54.4
compass	54.1

*Total exceeds 100 percent due to multiple response.

Liveboard divers were more likely to own dive gear (ninety-two percent) than were day trip divers (eighty-two percent) ($\chi^2=14.552$, $df=1$, $sig=.000$). The value of dive gear investment was also significantly greater for liveboard divers. The average value of equipment for liveboard divers was \$2824 (median=\$2000, mode=\$2000), compared to \$1599 (median=\$1100, mode=\$2000) for day trip divers ($\chi^2=26.652$, $df=7$, $sig=.000$). The average value of dive computers (LA-\$454.00, DT-\$409.00, $\chi^2=20.382$, $df=4$, $sig=.000$) and underwater cameras (LA=\$1914.00, DT=\$875.00, $\chi^2=13.883$, $df=5$, $sig=.016$) also differed based on trip type.

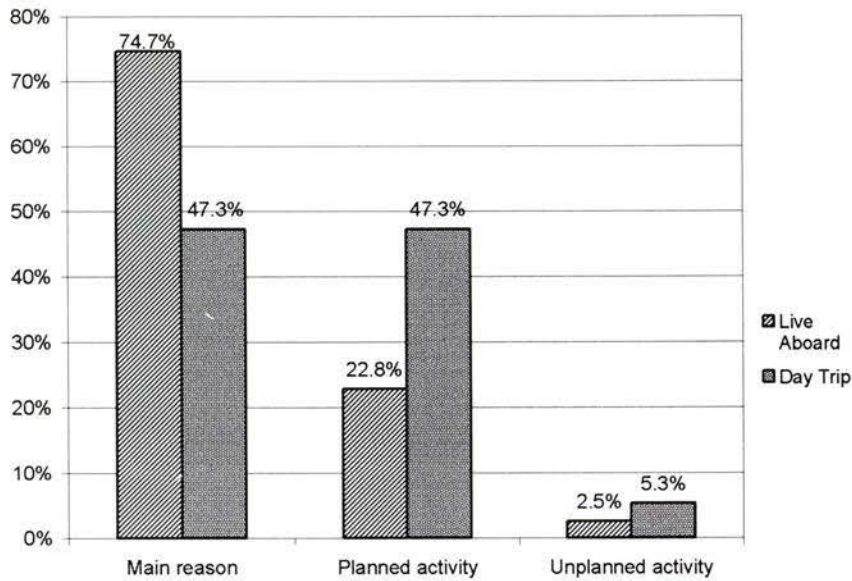
4.1.7. Trip Characteristics

While forty percent of the survey respondents had been diving in Thailand prior to this dive trip, sixty percent were first time divers in Thailand. Liveboard divers planned to spend an average of 5.62 days on their dive trip, while day trip divers planned to take an average of 4.83 day trips (median=3, mode=2).

On average, divers spent an average of twenty-one days in Thailand (median=14, mode=14), and forty-one days away from home (median=17, mode=14). Statistics compiled by the Tourism Authority of Thailand indicate that the average length of stay for tourists in 2000 was 7.77 days. Regardless of the measure used, it appears that dive tourists spend a significantly longer period in Thailand than tourists overall.

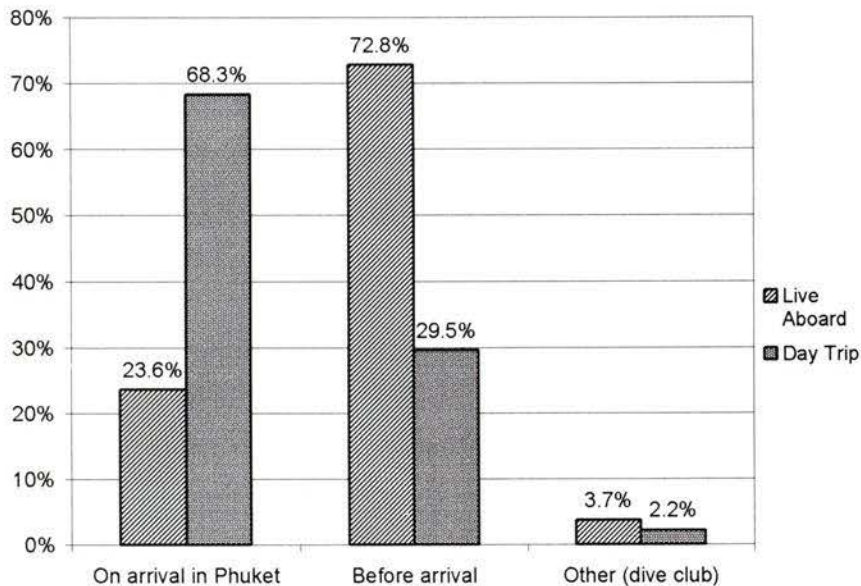
For sixty-four percent of respondents, diving was the primary reason for their travel to Phuket. A further thirty-two percent of divers indicated that they had planned to participate in scuba diving during their Phuket holiday. Diving was an unplanned activity for less than four percent of divers surveyed (figure 4.6). These results have important repercussions for the Phuket and Thailand tourism industries, in that diving clearly plays a significant role in the holiday destination choice of a large proportion of divers. Liveboard divers were significantly more likely to indicate that diving was the main reason for their trip to Phuket than were day trip divers ($\chi^2=45.010$, $df=2$, $sig=.000$).

Figure 4.6. The Importance Of Diving As A Reason For Visiting Phuket
A Comparison Of Day Trip And Liveaboard Divers



Of the divers surveyed, fifty-six percent arranged their dive trips prior to their arrival in Thailand, while forty-one percent booked their trips upon arrival. Three percent of respondents indicated that their dive trip was arranged by someone other than themselves, usually a member of their dive club (figure 4.7). Liveaboard divers were more likely to book their trip before arriving in Thailand than were day trip divers ($\chi^2=114.804$, $df=2$, $sig=.000$).

Figure 4.7. When Arrangements For Dive Trip Were Made
A Comparison Of Day Trip And Liveaboard Divers



4.1.8. Summary

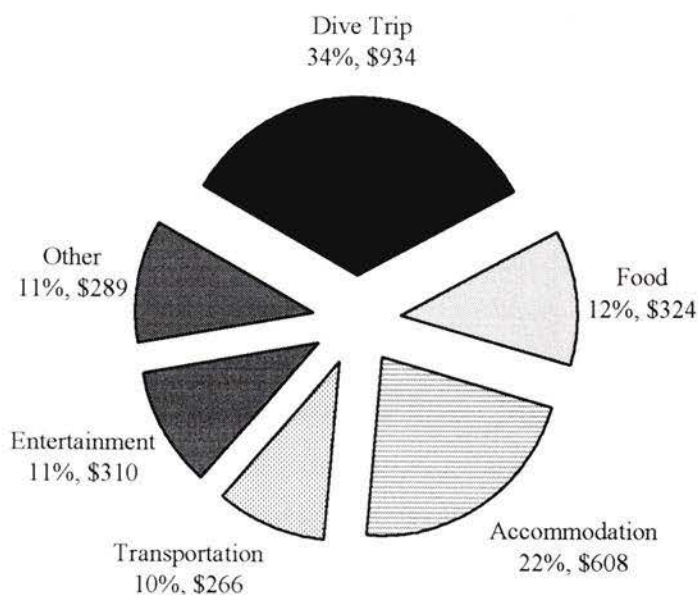
Survey results indicate that Phuket is a dive holiday destination with the ability to attract divers from throughout the world. Ninety-six percent of divers surveyed stated that diving was their main reason for travelling to Phuket, or a planned activity on their trip. Eight-two percent of respondents have been diving in other locations throughout the world, indicating that Phuket is 'on the list' of the world's interesting dive holiday destinations. These results clearly illustrate the importance of diving to the Phuket tourism industry.

Overall, comparison of the survey data collected in this study and the information available on the characteristics of scuba divers surveyed in other dive tourism destinations throughout the world suggests that those surveyed in Phuket are typical divers. While the results are typical overall, significant differences in this sample were highlighted between divers who took day trips and those who took liveaboards. On average, divers who took liveaboard trips were older, more educated, were certified divers for a longer period of time, had significantly more recent dive experience, and had a greater financial commitment to diving than divers who took day trips. Liveaboard divers were more likely to have arranged their dive holidays prior to arriving in Thailand, and were more likely to travel to Phuket specifically for the diving opportunities. Further analysis will determine whether these differences are reflected in the motivations, expectations and satisfactions of the divers (see chapters five and six).

4.2. The Financial Impact of Dive Tourism in Phuket

One objective of this research project is to examine the economic issues related to the dive tourism industry in Phuket, and more specifically, to evaluate the financial contribution that diving makes to the economy in this region. The divers were asked to provide information on their expenditures during their holiday in Thailand, not only to the dive companies, but to the wider community as well by means of food, accommodation, transportation, entertainment, and other miscellaneous costs. The average expenditure for the divers surveyed was \$2730 US, broken down in figure 4.8, and illustrated in US dollars and percentage of total expenditure.

Figure 4.8. Average Diver Expenditure in Thailand



Clearly, the financial impact of diving reaches well beyond members of the dive industry. Of course, the estimated expenditures by dive tourists is not equal to the overall financial contribution to Phuket's economy, as a certain portion of the goods sold to tourists will be imported to the region at wholesale value (Leeworthy *et al.*, 2000). While the exact figure is not known, it is likely that a significant amount of the diver expenditures remains to circulate through Phuket's economic linkages. Much of the dive tourist spending is likely returned to the local economy by way of wages for workers at the dive companies, hotels, restaurants and other service providers. At the dive companies alone, diver dollars go toward paying the dive master, dive instructor, boat captain and staff, cooks, truck drivers, long-tail boat captains, dive shop staff, office workers, laundry staff, maintenance staff, etc. These individuals then invest their wages in the local economy by means of their own living expenses. In addition, dive companies circulate their income back to the economy through fuel purchases, boat mooring and storage charges, pier fees, dive shop rental charges, national park fees and permits etc. While it is impossible to determine how much of the dive tourist expenditures actually benefit the local area, the industry is clearly an important contributor to the Phuket economy.

The overall financial impact made by diving has never been quantified. The following is an estimation of the financial contribution made to all sectors of the Thai economy by scuba divers during the 1999-2000 dive season. As discussed in section 4.1.7, the majority (ninety-six

percent) of these divers traveled to Thailand for the diving opportunities offered in Phuket, and thus, these contributions would perhaps not occur if not for the Phuket dive industry. Quantifying the financial impact of scuba diving entails estimating how many divers actually visited Phuket during the given time period, as discussed in the following section.

4.2.1. Estimate of Liveaboard Divers

During the 1999-2000 dive season, at least forty-one dive boats and fourteen sailboats were catering to divers in Phuket, in addition to the numerous boats that were available for private charter. Combined, these boats provided approximately 1016 liveaboard dive trips to the Similan and Surin Islands, plus an additional three hundred and twenty-five scheduled trips to other liveaboard locations not included within the Marine National Parks. Assuming one hundred percent boat occupancy, these trips provided opportunities for **20 037** divers to enjoy an average of four days on a liveaboard dive trip.

During the season from which these numbers were collected, many companies were beginning to run liveaboard dive trips during the 'low' season. However, the schedules for such trips were not available when the data was collected, and thus are not included in this analysis. It is significant to note that many additional companies are now offering the dive trips throughout the year. It is therefore reasonable to assume that these estimates should be considered on the low side. It is also important to note that since the 1999-2000 season, numerous new boats have been added to the liveaboard fleet.

Conversely, it is known that not all dive trips operate at one hundred percent occupancy, and that some divers partake in more than one dive trip during their stay in Phuket. It is therefore assumed that these additions and subtractions will balance each other out.

4.2.2. Estimate of Day Trip Divers

A variety of opportunities exist in Phuket for divers interested in taking day trips. There are several destinations for day trip dive boats, in addition to the dive sites that can be accessed from the beach or by long tail boat. Several of the popular dive locations offer more than one site for diving.

During the 1999-2000 season at least fourteen dive boats, with an average maximum occupancy of twenty divers (not including staff and crew) offered daily trips to the various dive sites. Additionally, numerous private boats are available for charter. Because no data is available for these boats, they are excluded from the analysis.

The maximum daily occupancy for the fourteen dive boats is approximately two hundred and eighty divers. To account for the facts that the dive boats do not always operate at maximum occupancy; not all the dive boats operate year round (although most do); many divers partake in more than one day trip during their visit to Phuket; and based on personal observations and discussions with dive staff, owners and operators, it is safe to assume a daily average of one hundred day trip divers. All things considered, the dive industry provides opportunities for approximately **36 500** divers to enjoy day trips each year in Phuket.

4.2.3. Financial Contribution of Liveboard and Day Trip Divers

Liveboard (20037) and day trips (36500) combined, it is estimated that the Phuket dive community provided diving opportunities for approximately **56 537** divers during the 1999-2000 tourism year. This total should be considered a low estimate of the number of divers in Phuket in a particular year. The total does not include divers on privately chartered boats, divers who have traveled to Phuket for diving certification, or those who choose to dive at sites accessible from the beach or long tail boats.

Using the average expenditure figures reported above in figure 4.7, the estimated expenditure in each category for the 1999-2000 season is presented in table 4.3.

Table 4.3. Divers Estimated Expenditures To The Economy Of Thailand

Category	Expenditure (US Dollars)
Dive Trip	\$52,789,727.64
Food	\$18,316,291.89
Accommodation	\$34,380,149.70
Travel	\$15,026,403.86
Entertainment and souvenirs	\$17,521,381.67
Other	\$16,323,928.01
Total Expenditures	\$154,357,882.77

4.2.4. Summary

Tourism contributes substantially to the economy of Phuket and diving is clearly an important contributor to this income. The diver survey indicates that ninety-six percent of divers traveled to Phuket with the intention of diving during their stay. Based on this, an estimated one hundred and fifty-four million US dollars enters the Thai economy due to the spin-off effects of the Phuket diving industry. Such financial gains would likely not occur if the marine resources that attract the tourists to the area were not available.

It is important to acknowledge that not all of the tourism expenditures remain within the country. It would be difficult, if not impossible, to establish the disbursement of such funds. A study conducted by the World Bank suggested that more than half of the revenue from tourism in developing countries leaked back to developed countries (Shackley 1996). Interestingly, the degree of leakage was drastically reduced for 'ecotourism' endeavors, which dive tourism is often considered to be. This topic will be discussed further in chapter ten. However, overall, the degree of leakage is less important than the overall finding that the marine resources are responsible for drawing a large number of visitors with significant spending power to the region, who, in the absence of such resources, would likely spend their money elsewhere.

Chapter 5. RESULTS- DIVING MOTIVATIONS

The objective of this section is to understand the range of experiences desired by divers in Phuket, so that the planning and management of the marine resources and the dive industry can incorporate measures to protect and provide for such opportunities. This section reviews the leisure motivation literature, and provides a synopsis of the previous research undertaken on diver's motivations for participating in scuba diving, and the features that are most important in the selection of dive tourism destination. The results for this particular study are then presented, first in aggregate form, and then broken down by the type of dive trip. A summary and discussion conclude this chapter.

5.1. Literature Review

5.1.1. Leisure Motivations

The concept of leisure motivation has been widely explored in the literature over recent decades and a large body of theory has developed. Psychologists regard a motive as an internal factor that arouses and directs human behavior (Iso-Ahola, 1989). Motivations have also been likened to the awareness of potential satisfaction (Iso-Ahola 1982). While motivation for travel and tourism is just one facet of leisure motivation, and while there is no single theory which adequately explains why people do what they do, a number of the leisure motivation theories are relevant to this study of dive tourism in Thailand.

Several theories suggest that people are motivated to partake in leisure travel out of curiosity and a need for change. Crompton (1979) proposes that the desire to experience new environments may be a significant reason for participation in particular leisure activities. Gray (1970) and Cohen (1972) suggest that the desire to escape familiar surroundings and experience new environments, cultures and customs motivates individuals to travel. Gray (1970) stresses the importance of 'setting', and suggests that people travel in search of a setting they perceive to be desirable for partaking in specific recreational activities. These ideas are linked by Dann (1981), who suggests that motivation for leisure travel is a construct of the relationship between the 'push' factors, or the desire to experience new and different things, and the destination 'pull' factors, which induce travelers to visit one area rather than another. These concepts are relevant to the study of dive tourism as marine environments offer opportunities for individuals to escape their familiar routines and surroundings, and partake in recreational diving in a variety of different settings. Because dive tourism activities are dependent on specific settings deemed desirable by divers, individuals are motivated to travel to particular locations that are suitable for

pursuing diving (Orams, 1999). Thus, divers may experience 'push factors' that cause them to seek new and exciting dive environments, and 'pull factors' exerted by the lure of Phuket as a unique and desirable dive destination. Clearly, the knowledge of diver's motivations for both participating in diving and selecting specific settings in which to undertake diving are intricately bound to considerations of marine resource management.

A similar theory proposes that two distinct forces can explain motivation for leisure: seeking personal and social rewards, and escaping from personal and social environments (Iso-Ahola 1982). Intrinsic rewards are sought in leisure in the sense that participants derive satisfaction from the challenge or excitement of the activity. Leisure activities also afford the opportunity to escape from the regular routines of life. Orams (1999) suggests that the application of this approach to marine-based recreation is valid, as many of these activities are appealing not only because they are enjoyable for the participants, but also because they offer an opportunity to escape from familiar physical and social environments. Thus, individuals may decide to travel to Phuket for diving because they believe it will provide them with the opportunity to experience and enjoyable and fulfilling dive holiday, and an escape from their every day routine.

Much of the early work on leisure motivation was based on an extension of the human need for physiological balance or homeostasis. Beard and Ragheb (1983) suggested that the need to retain a steady level of psychological stimulation leads people to participate in certain activities. Hence, individuals who participate in exciting and stimulating leisure activities are thought to be bored or under-stimulated in their everyday life, while those who experience daily stress and over-stimulation are motivated to participate in relaxing leisure activities. Naturally, humans are complex creatures, and the experiences and feelings that leisure activities provide are subjective. What is stimulating to one individual may not be to another, and this may account for the different motivations and preferences among people seeking marine recreation activities (Orams, 1999).

In his 'optimal experience theory', Csikszentmihalyi (1975) suggests that when participants engage in activities that match their skill level with the challenge provided by the activity, a psychological state, termed 'the flow' is achieved. The 'flow' experience, defined as 'one of complete involvement of the actor with his activity' (Csikszentmihalyi 1975:36), is characterized by the participant's concentration on the task, a loss of sense of time, and feelings of euphoria. This flow state has been examined in research on risk recreation. For example, Zuckerman (1979), Ewart (1989) and Schuett (1994) suggest that humans seek challenging leisure activities and environments that provide a sense of triumph when mastered or overcome,

and this enables participants to generate the 'flow'. Marine activities often involve some element of risk, and provide tourists with the opportunity to be challenged and to experience the 'flow' state, while also allowing them to accomplish things that result in feelings of achievement and competency. This may be particularly true of recreational scuba diving. This sport often provides divers with 'peak experiences', which are existential moments that induce a heightened sense of being alive, and make people happy and less stressed (Shackley 1996). Divers often describe the flow state as a feeling of ultimate peace and tranquility, where they forget all their worries and stress. Diving, like many other outdoor pastimes, clearly has psychological benefits for individuals.

Identifying specific leisure needs and understanding the types of opportunities that can fulfill them is an important element of recreation resource management. Research suggests that individuals choose to participate in activities, in various settings, that provide them with the opportunity to challenge skills, enhance self-esteem, socialize with others, relax, and experience stimulation and excitement (Manfredo *et al.*, 1983; Ewart & Hollenhorst 1989). Thus, the need satisfying properties of various activities and settings exist largely in the mind of the participant, and not necessarily in the activity itself (Driver & Brown 1984). The application of these findings to parks and recreation management strategies has allowed researchers to develop various classification and zoning systems for natural recreation areas based on the leisure needs and satisfactions experienced by users (Mannell, 1997). Managerial decisions affect the character of the resource base, the types of activities that are permitted, and how the environment appears to recreationalists.

Undoubtedly, an important component in the provision and effective management of marine tourism activities is an accurate understanding of visitor motivations. The importance of visitor research in the management of marine tourism and recreation has become increasingly recognized in recent years (e.g. Pearce *et al.*, 1997; Greenwood & Moscardo 1999; Moscardo 1999; Orams 1999). Tourists will seek marine tourism experiences that they believe will fulfill their needs and provide them with the benefits they desire. Obtaining a clear understanding of such motivations and desires provides resource and tourism industry managers with information on the demand for various types of experiences and settings. Using and benefiting from such information is a vital step in linking resource and marine tourism industry management action to sound social science research (Pearce *et al.*, 1997), which ultimately is a critical requirement for sustainable tourism.

5.1.2. Motivations for Diving

Several studies undertaken at various dive tourism destinations offer some insight into participation in scuba diving. Early management of reef tourism in Australia's Great Barrier Reef Marine Park was hindered by poor understanding of the visitor (Pearce *et al.*, 1997). However, efforts over the past several years have resulted in the most thorough database compiled on divers to date. Research, along with common sense, indicates that the reasons people initially learn how to dive are closely associated with underwater attractions (Davis *et al.*, 1996). The most important reasons for first learning to dive, as identified by divers in Australia include:

- interest in marine flora and fauna,
- desire for wilderness experience,
- seeking adventure and/or risk,
- interest in career or employment,
- interest in particular underwater features,
- pursuit of hobbies such as underwater photography.

(Davis *et al.*, 1996)

The same study found that the factors that most influence the choice of dive sites or locations include:

- the opportunity to experience a variety and abundance of marine life,
- the presence of coral and geologic formations,
- special marine species such as sharks,
- good visibility,
- general lack of crowding.

(Davis *et al.*, 1996).

Divers throughout the world have given similar reasons for selecting both a particular diving destination, and specific dive sites. Divers surveyed in the Cayman Islands reported that they selected this destination based on the outstanding features of the area for diving, the rich diversity of marine flora and fauna, the presence of large fish, and the range of diving opportunities available (Shackley 1998). Among divers surveyed in the Medes Islands, the main reason for selecting this particular locale was the area's rich marine life (Mundet & Ribera 2001). In fact, 90 percent of the divers surveyed indicated this was of foremost importance. The most significant factors affecting the selection of dive sites by divers in Hawaii were the outstanding marine life of the area, good underwater visibility, the opportunity for underwater photography,

and generally calm waters with no strong currents (Tabata 1992). Characteristics important to divers in the Caribbean were the amount of coral cover and the presence of special topographic features (Pendleton 1994). These divers sought to maximize their overall diving enjoyment by choosing a destination that they perceived would provide them with a greater degree of satisfaction, even though the vacation was more expensive than it would have been elsewhere (Pendleton 1994: 402). Divers surveyed in Jamaica rated the abundance, size and variety of fish and coral as important to their enjoyment of their dive trip (Williams & Polunin 2000).

Common factors that influence the choice of dive locations by divers include peacefulness, solitude, and the opportunity to dive in natural settings uninfluenced by people. Clearly, the motivations of scuba divers are closely related to the natural environment. Several studies have reported similar motivations among ecotourists (e.g. Eagles 1992; Crossley & Lee 1994; Wight 1996; Palacio & McCool 1997). For example, among ecotourists, the opportunity to visit uncrowded destinations and experience natural environments in an unspoiled wilderness setting is of critical importance. Hundloe (as cited in Davis & Tisdell, 1996: 28) suggested that the marine environment is “the last frontier”, and therefore, the wilderness experience gained from scuba diving is “the most significant explanation of the demand for the sport and for individual dive sites” (Davis & Tisdell, 1996: 28). Small numbers of divers and low levels of visitation in high quality, undisturbed environments are considered to be the factors central to a ‘wilderness experience’ (Kenchington 1990). A significant proportion of the amenity values, or satisfaction, associated with diving is thought to relate to the wilderness experience, and thus, this characteristic is considered to be an important determinant of demand for diving and dive sites (Davis & Tisdell 1996). Eighty percent of divers surveyed in Australia indicated concern about crowding at the dive sites (Davis *et al.* 1996). This is of concern, as poor satisfaction levels are often recorded in areas that are too crowded, or crowded with people doing some activity which visitors find to be unacceptable (Shackley 1996).

As dive sites become crowded and degraded, dive companies are forced to move into new ‘untouched’ areas to maintain customer satisfaction. Worldwide, the dive industry is already experiencing a diminished supply of new, pristine areas that are accessible given present technology (Orams, 1999). In addition to the loss of biodiversity, it is expected that the increased growth in the marine tourism industry will result in a decrease in the wilderness experience feeling, and inevitably a decrease in the satisfaction levels of many marine recreationalists, including scuba divers (Inglis *et al.*, 1999). Thus, the protection and maintenance of the existing dive environments is vitally important to the satisfaction of the divers and the sustainability of the dive industry. Balancing the adverse effects of marine tourism with marine resource protection is

a challenging task. As the number of divers continues to rise, a clear understanding of the visitors' motivations, expectations and needs is required to facilitate improved management of the dive sites, and ultimately, maintain marine environmental quality while providing for positive visitor experiences (Harriot et al., 1997).

5.2. Results

An understanding of what motivates divers to spend considerable money, time and effort to travel to Phuket for diving is essential to develop effective management strategies that contribute to the sustainability of the dive tourism industry. An important aspect of this research is to examine the diver's motivations for visiting Phuket and their expectations for their dive trip, and ultimately determine the range of qualities they are seeking in their dive experience.

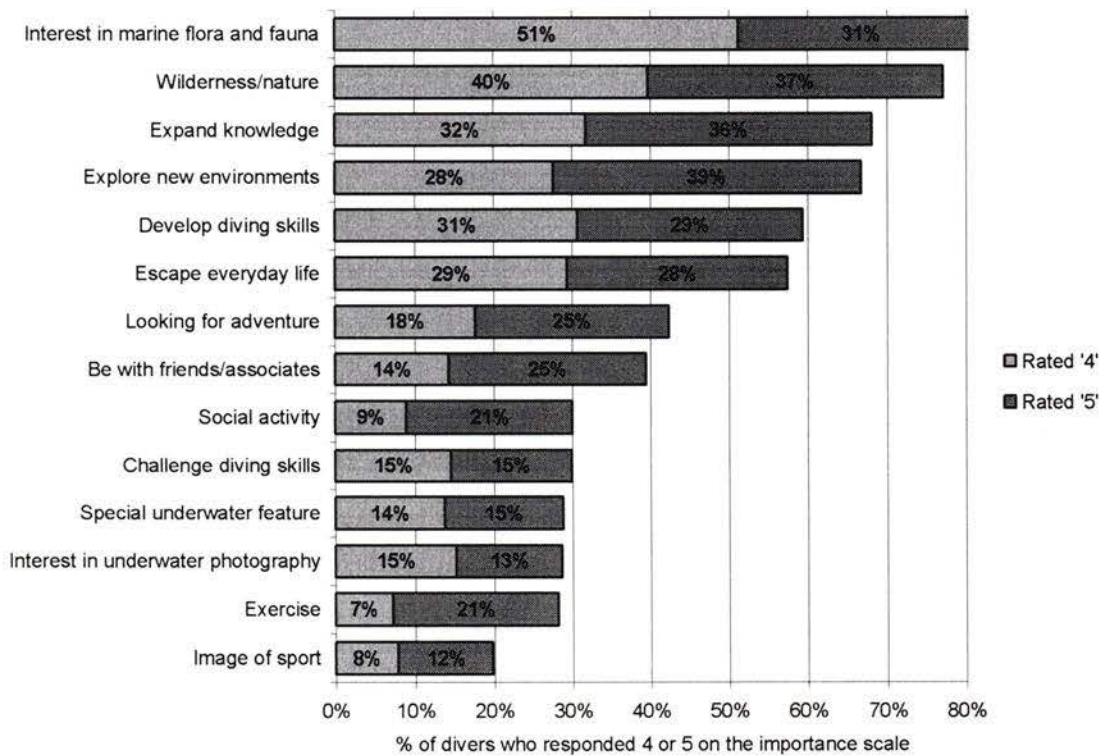
The literature on diving (e.g. Pendleton 1994; Davis *et al.*, 1996; Shackley 1998) indicates that the reasons people initially learn how to dive are closely associated with underwater attractions. The characteristics of the marine environment also play a primary role in attracting dive tourists to specific locations. Previous works have suggested that for many divers, the marine attractions play an important role in the decision to travel to Phuket for diving (Ruyabhorn & Phantumvanit 1988; Hale & Olsen 1993; Piprell 1997). This section describes the divers' reasons for participating in scuba diving, their reasons for selecting Phuket as a dive destination, and outlines the features of the diving experience that are of particular importance. The results are presented first in aggregate form, followed by a comparison of the day and liveboard trip findings.

5.2.1. Aggregate Results - Diving Motivations

5.2.1.1. Reasons for Participating in Scuba Diving

To gain insight into the needs that divers are trying to meet through scuba diving, and to provide a high quality experience that meets these needs, it is important to understand why people participate in scuba diving. In motivational terms, these can be considered the 'push factors'. The pre-dive survey listed fourteen possible reasons for participating in diving, and asked divers to indicate, on a five-point scale (where 1= not at all important, 5=extremely important) the importance of each reason to them. Figure 5.1 shows the percentage of divers who responded with a rating of four or five to each particular feature. Interest in marine flora and fauna, a wilderness experience, the opportunity to expand knowledge and explore new environments were rated highest. Least important to divers were the opportunity to partake in underwater photography, exercise, and the image of the sport.

Figure 5.1. Importance Of Possible Reasons For Scuba Diving



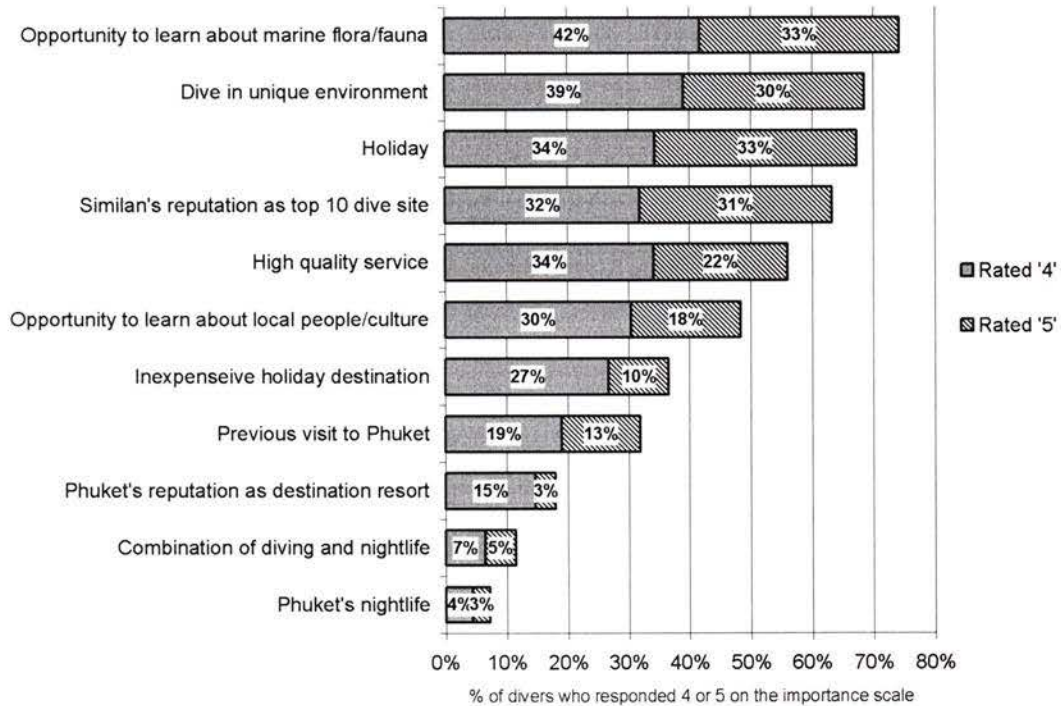
5.2.1.2. Reasons for Selecting Phuket as a Dive Tourism Destination

In order to provide visitors to Phuket with enjoyable diving experiences that satisfy their expectations, it is important to understand the reasons that they selected Phuket for their dive holiday. In motivational terms, these can be considered the destinational 'pull factors'. The pre-dive survey listed eleven possible reasons why divers decided to participate in diving in Phuket, and asked respondents to indicate, on a five-point scale (where 1= not at all important, 5=extremely important) the importance of each reason to them. Figure 5.2 shows the percentage of divers who rated each possible reason a four or five on the importance scale.

The most important reasons divers selected Phuket as a dive destination were the opportunity to learn about the marine flora and fauna, dive in a unique environment and enjoy a dive holiday. The Similan Marine Park's reputation as being among the world's top dive sites was also an important motivating factor in the choice to visit Phuket. Less important to divers in their choice of dive destination were Phuket's reputation as a destination resort, and the local nightlife. Interestingly, that Phuket is an 'inexpensive holiday destination' was important to only thirty-seven percent of the divers surveyed. Many divers commented that, in fact, Phuket is not inexpensive, yet they selected it anyway, despite the fact that less expensive alternatives were

available. This supports the dive tourism literature that suggests divers often place more importance on the quality of a dive experience than the expense incurred (Pendleton 1994).

Figure 5.2. The Importance Of Various Reasons For Diving In Phuket

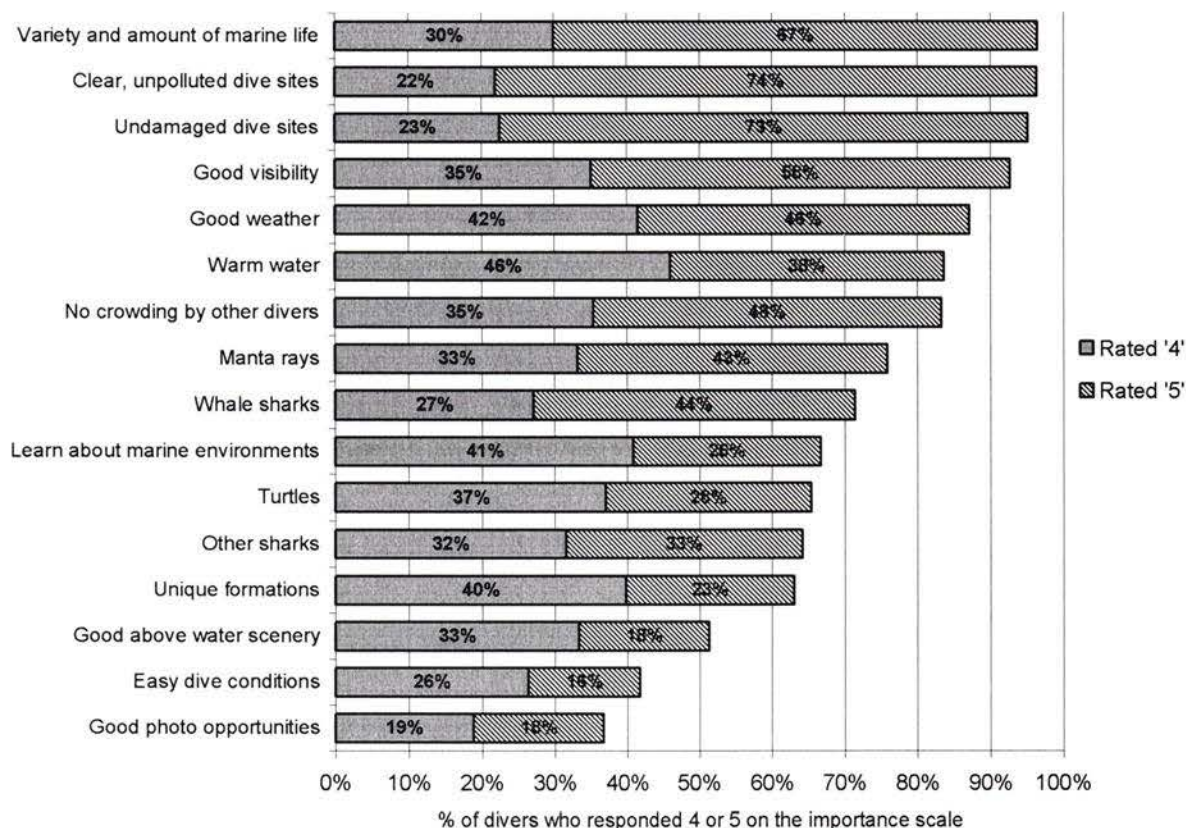


5.2.1.3. Environment and Setting Features

To ensure the provision of a high quality dive experience, it is important to be aware of the types of features divers desire on their dive trips and the value they place on the particular features. It is also important to understand the specific expectations that divers have for their trip overall. The pre-dive survey listed 16 environment and setting features and asked respondents to indicate, on a five-point scale (where 1= not at all important, 5=extremely important) the importance of each reason to them. Figure 5.3 illustrates the percentage of divers who rated each feature four or five on the importance scale.

The environment and setting features rated most important to divers related to the quality of the marine environment. Features such as the variety and amount of marine life, and the presence of clear, unpolluted, undamaged dive sites with good visibility were important to more than ninety percent of the divers surveyed. The lack of crowding by other divers at the dive sites was rated as important by eighty-three percent of divers. Least important to diver was the presence of easy dive conditions and good opportunities for underwater photography.

Figure 5.3. The Importance Of Dive Trip Environment And Setting Features



In addition to the rating scale, a validity check was completed, whereby divers were asked to specify which of the sixteen features listed above were most important to them (table 5.1). The results for both measures of importance are consistent, with the variety and amount of marine life, clear unpolluted dive sites, undamaged dive sites and good underwater visibility ranking in the top five of each. The importance of environmental features to the divers is evident, and the natural conditions appear to be the most highly valued aspects of the dive experience overall.

Table 5.1. Environment/Setting Features Selected As 'Most Important'

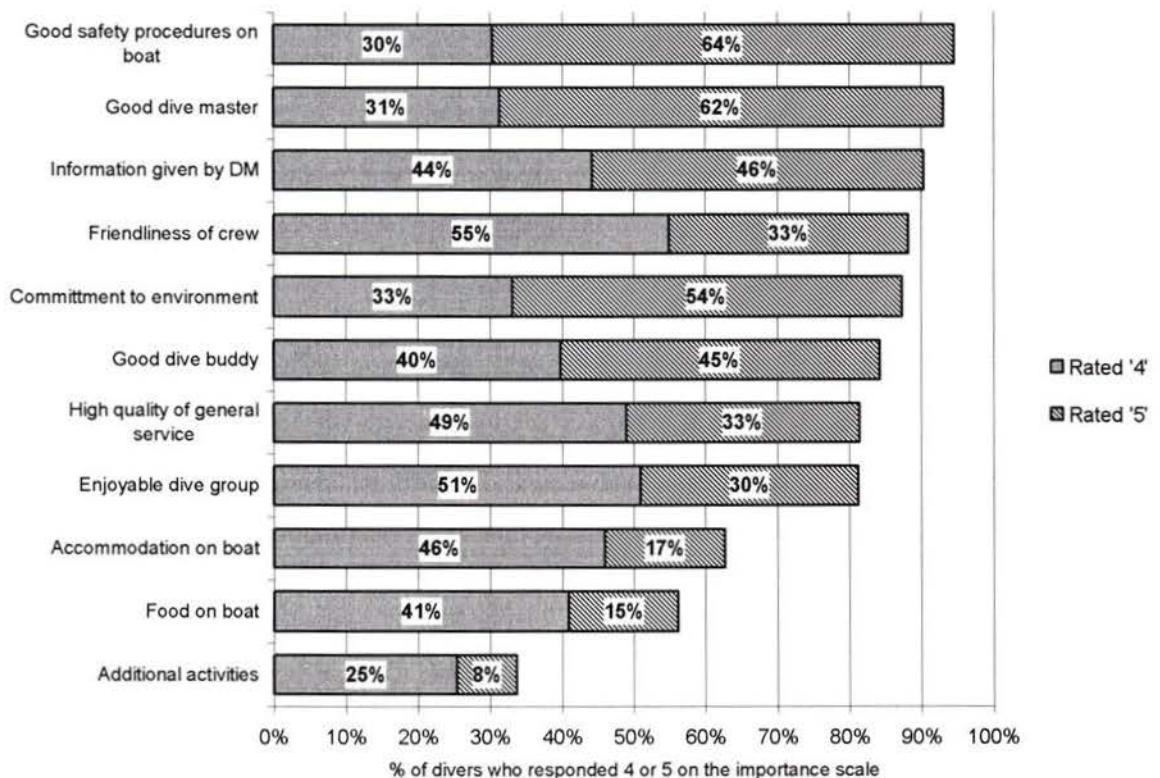
Environment/Setting Feature	% of Divers who Selected as 'Most Important'
Variety and amount of marine life	30.8
Clear unpolluted dive sites	16.6
Undamaged dive sites	13.2
Whale sharks	12.1
Good underwater visibility	6.9

5.2.1.4. Service Features

The pre-dive survey asked divers to indicate on a five-point scale (where 1= not at all important, 5=extremely important) the importance of eleven services to their enjoyment of the dive trip. Figure 5.4 illustrates the percentage of divers who rated the importance of each feature a four or five.

The service features rated as most important to divers related to diver safety. The presence of good safety procedures on the dive boat and a good dive master that provides adequate information were important to more than ninety percent of the divers surveyed. The commitment to the environment of the dive shop and boat crew were rated as important by more than eighty-seven percent of divers. Least important of the service features were the food on the boat and the provision of additional activities.

Figure 5.4. The Importance Of Dive Trip Service Features



A validity check was also completed for the service features, where divers were asked to specify which of the eleven features listed above were most important to them (table 5.2). Again, the most important features identified by the two measures are very similar. Of the service features listed, safety issues appear to be the most important to divers. The provision of both

good safety procedures on the boat, and a good dive master that provides adequate information and guidance are highly valued aspects of the dive trip. High quality of general service and a strong commitment to the environment by the dive company and staff are also valued by divers.

Table 5.2. Service Features Selected As ‘Most Important’

Service Feature	% of Divers who Selected as ‘Most Important’
Good safety procedures on boat	33.8
Good dive master	18.9
Information given by dive master	12.8
Commitment to environment by dive shop and staff	9.8
High quality of general service	5.9

5.2.2. Disaggregate Results- Diving Motivations and Trip Type

Because the physical environment at the dive sites and the social environment on the dive boats are so different (as discussed in chapter two), liveaboard and day trips can provide significantly different experiences for divers. Liveaboard trips provide an intense yet relaxing dive holiday experience over a period of several days, and give divers the opportunity to dive at many different sites, often in remote, uncrowded conditions. Day trips offer divers the opportunity to experience one or two dive sites within a relatively short distance from Phuket. The sites may be somewhat crowded, however, this type of trip offers a certain flexibility to individuals interested in more than diving during their holiday experience. According to the scuba diving and leisure motivation literature (e.g. Graefe & Vaske 1987; Ryan 1995; Shackley 1996; White & Mahoney 1996; Piprell 1997), from all the options available to them, individuals will select a particular dive trip that they anticipate will satisfy their interests and needs. Results indicate that day trip and liveaboard divers exhibit differences with regard to the importance of various reasons in their decision to participate in scuba diving, their decision to select Phuket as a dive tourism destination, and the degree of importance they place on the various dive trip environment and service features. To determine whether these differences were significant, chi squared tests were applied (table 5.3).

Table 5.3. The Importance Of Various Dive Trip Features:
A Comparison Of Day Trip And Liveaboard Divers

Reasons for Diving Overall	% of Divers Responding 'More Important'*				
	Day Trip	Live Aboard	chi ²	df	sig
Interest in underwater photography	21.6	32.8	8.133	1	.004
To develop my diving skills	67.6	54.2	10.092	1	.001
Image of the sport	25.1	16.5	6.245	1	.012
Exercise	37.9	22.3	16.069	1	.000
Reasons for Diving in Phuket					
Holiday	72.7	64.0	4.57	1	.033
Similan's reputation as top 10 dive site	46.9	73.1	38.927	1	.000
Phuket's reputation as resort destination	23.7	14.5	7.711	1	.005
Phuket's nightlife	10.1	5.4	4.636	1	.031
Combination of diving and nightlife	14.7	9.3	3.796	1	.051
Inexpensive place for a dive holiday	47.4	29.9	17.517	1	.000
Opportunity to dive in unique environment	63.3	71.8	4.477	1	.034
Environmental Features					
Easy dive conditions	55.5	33.4	27.087	1	.000
Whale Sharks	59.2	79.0	26.073	1	.000
Other sharks	53.0	71.1	19.529	1	.000
Manta Rays	64.4	82.9	25.455	1	.000
Good Photo Opportunities	29.1	41.3	8.513	1	.004
Service Features					
Accommodation on Boat	56.7	66.3	5.225	1	.022
Food on Boat	39.2	66.5	40.931	1	.000
Information given by DM	93.6	88.2	4.395	1	.036
Additional activities on boat	39.0	30.5	4.270	1	.039

*Importance calculated using a 5 point scale, with 1 being not at all important, and 5 being very important
For this comparison, 1, 2 and 3 are classified as less important, and 4-5 are classified as more important.

5.2.2.1. Reasons for Participating in Scuba Diving

The degree of importance placed on underwater photography was significantly greater for liveaboard divers than for day trip divers, while the opportunity to develop diving skills and get exercise are greater for day trip divers. To be involved in a sport that is perceived to have a glamorous, exciting and adventurous image, while generally less important overall, was somewhat more important to the day trip divers.

5.2.2.2. Reasons for Selecting Phuket as a Dive Tourism Destination

The Similan's reputation as one of the world's top dive sites was more important to liveaboard divers, as was the opportunity to dive in a unique environment. The opportunity to take an inexpensive holiday and to learn more about the local people and culture were more important to day trip divers. While generally less important overall, Phuket's reputation as a

resort destination, Phuket's nightlife and the combination of diving and nightlife were more important to day trip divers.

5.2.2.3. Environmental Features

Day trip and liveboard divers indicated several significant differences in the level of importance placed on the dive trip environment and setting features listed. Easy dive conditions were more important to day trip divers than to those who took liveboard trips. Seeing manta rays and sharks, especially whale sharks, on the dive trip was more important to liveboard divers, as was the chance to experience good photo opportunities.

5.2.2.4. Service Features

Several significant differences in the level of importance given to various dive trip service features by liveboard and day trip divers were evident. Accommodation and food on the boat and the presence of an enjoyable dive group was more important to liveboard divers, who spend a considerable amount of time in close and confined quarters on the multi-day dive trips. The information provided by the dive master, while important overall, was significantly more important to the day trip divers.

5.3. Summary

Analysis of the importance data has highlighted that different aspects of the dive trip are of varying importance to divers, and has illustrated the heavy reliance of the dive industry on the presence of attractive marine resources to both attract and satisfy divers. The results suggest that both the 'push features', (the elements that entice individuals to participate in diving), and the 'pull features', (the characteristics that attract divers to Phuket) are closely related to the marine environment. The desire to have a wilderness/nature experience, while learning about and exploring the underwater world is important to a majority of divers in their decision to participate in scuba diving. Environment features such as the variety and amount of marine life, presence of clear, unpolluted and undamaged dive sites, and good underwater visibility are important to more than ninety percent of the divers surveyed. These results concur with the previous dive tourism literature. While previous studies on dive tourism have not investigated the role that service features play on the dive experience, this study found that features such as the presence of good safety procedures and a good, informative dive master are also very important to divers. These features are clearly of greater concern to divers than are other facets of the Phuket dive experience, such as the local nightlife, the food or presence of additional activities on the dive boats.

Section 4.1 showed that overall, divers on liveaboard trips have more lengthy and varied diving experience than those who took day trips. The degree of importance placed on various features appears to reflect these differences, and several broad generalizations can be made. Because individuals on liveaboard trips are generally more experienced and have been diving for a longer period of time, these divers would have had more time to develop specific interests such as underwater photography. Thus, the presence of good photo opportunities is significantly more important to them than to less experienced divers on day trips. The opportunity to dive in a unique environment is also more important to the experienced liveaboard divers than to divers who took day trips. Day trip divers, who are more likely to be less experienced, or, in fact beginners, place more importance on developing their dive skills. Thus, the presence of easy dive conditions and the relationship they form with their dive master is significantly more important to them than to liveaboard divers.

The identification of dive trip features that are highly valued by divers as part of the overall dive experience is a constructive tool for dive industry and resource managers striving to achieve the sustainable use of marine resources. By obtaining a deeper understanding of the diver's desires and expectations, managers can develop and apply objectives that provide satisfying visitor experiences that are less detrimental to the marine environment over the long term. This is necessary to ensure that the present use of the marine resources does not impact on the ability of these environments to provide for such use in the future.

This analysis has highlighted similarities in the motivations of the Phuket divers, and those commonly related to ecotourists in the academic literature. For example, the opportunity to experience and learn about the natural environment in an untouched, uncrowded wilderness setting was identified as an important aspect of the dive experience. These same characteristics are recognized as being important to ecotourists, and as critical components of an 'ecotourism experience' (e.g. Crossley & Lee 1994). As the literature suggests that marine activities are very important to ecotourists (Wight 1996), these findings lend support to the proposal that diving is a marine ecotourism activity, and many divers are ecotourists. Further research in this area is required.

So far, the findings from this study support the dive tourism literature and indicate that the characteristics and the quality of the marine environment play a primary role in attracting dive tourists to Phuket. While effective management from both dive industry and marine resource management perspectives is paramount to the on-going success of the dive industry, the results indicate a need for management approaches that are trip type specific, based on the motivations and expectations of the divers. This idea will be further developed in later sections.

Chapter 6. RESULTS- DIVER SATISFACTION

Visitors arrive at a destination with expectations shaped by their travel motivations, their perceptions of the area and their personal circumstances (Pendleton 1994). Visitor satisfaction occurs when people meet or satisfy their corresponding needs or motivations through their participation in a specific activity, while dissatisfaction is the perceived gap between expectation and reality (Mannell 1997, Ryan 1995, Shackley 1996). Satisfaction implies a judgment, or a comparison between what people experience and what they think they deserve, expect, or may reasonably aspire to (Mannell & Dupuis 1996). If the discrepancy is small, the result is satisfaction, but if it is large, dissatisfaction occurs.

An important goal of this research was to determine which dive trip features were satisfying to divers, and which features were less satisfying and thus require improvement. Identifying such features contributes to a greater understanding of diver perceptions of the dive experience, including environmental quality. This is a useful tool for resource and industry managers who are considering management objectives and future actions to ensure both environmental quality and ongoing positive visitor experiences. This chapter presents the diver satisfaction results, first in aggregate form, and subsequently disaggregated by dive trip type. A comparison of the satisfactions of divers who had previously been diving in Thailand and those new to the area is then presented, followed by an examination of the features that are most influential in providing a satisfying visitor experience. A summary and discussion conclude the chapter.

6.1. Aggregate Results

6.1.1. Overall Satisfaction

The post dive survey posed three questions designed to measure diver's overall satisfaction with their dive trip. Divers were asked to indicate on a ten-point scale, (where 1=very unsatisfied, and 10=very satisfied), their satisfaction with their dive trip overall. The mean satisfaction rating was 7.97. Divers were asked to indicate on a five-point scale how their Phuket dive experience compared to their expectations, (where 1=much worse, 2=worse, 3=about the same, 4=better, and 5=much better). The mean response to this question was 3.41. Using the same scale, divers were asked to assess how this dive experience compared to their previous dive experiences. The average response to this question was 3.40. These responses indicate that overall, the Phuket dive trip was a positive experience that was slightly better than the divers expected.

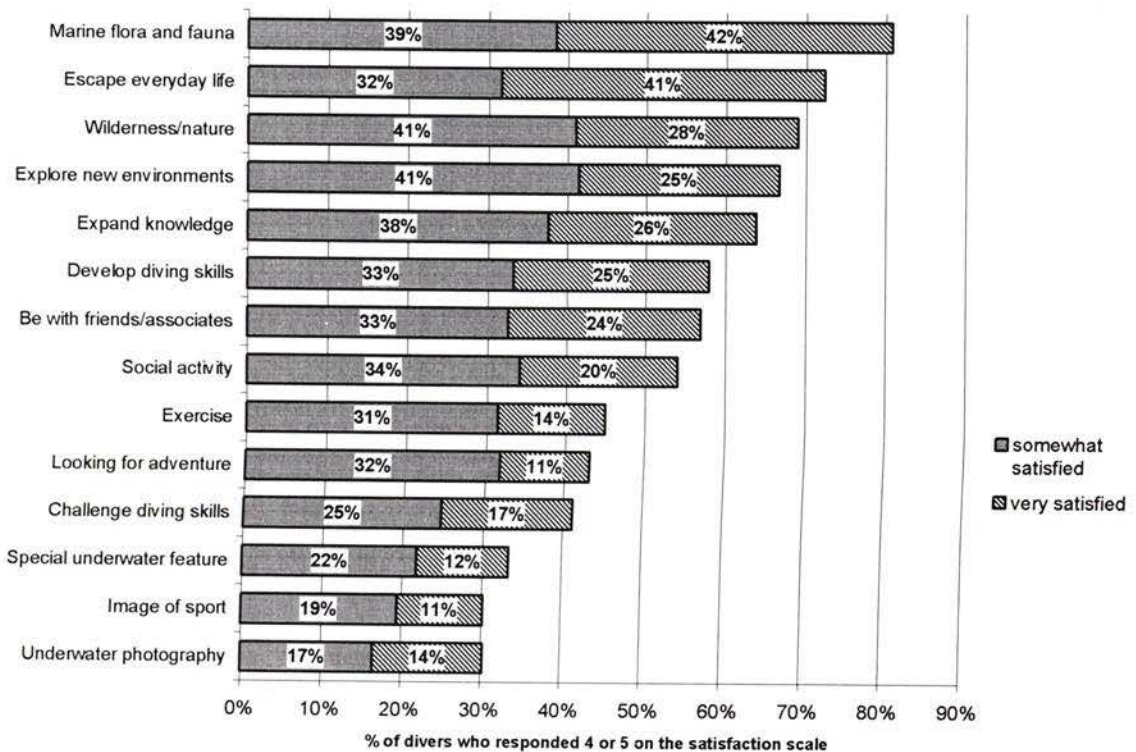
6.1.2 Satisfaction With Specific Dive Trip Features

In addition to the measures of overall satisfaction, divers were asked to specify their satisfaction with the opportunities provided on the dive trip, and with various dive trip features. Divers were asked to indicate their level of satisfaction on a five-point Likert scale (where 1=very unsatisfied, 2=unsatisfied, 3=neutral, 4=somewhat satisfied, 5= very satisfied). The degree of satisfaction with the individual reasons for diving, environment features and service features is varied, with some areas being significantly more satisfying than others.

6.1.2.1. Reasons for Participating in Scuba Diving

Figure 6.1 shows that of the reasons for participating in diving provided, the marine flora and fauna, opportunity to escape everyday life, the wilderness/nature experience, and the opportunity to explore new environments were satisfying to more than two thirds of the divers surveyed. The opportunity to get exercise, experience adventure, challenge diving skills, experience a special underwater feature, the image of the sport, and the chance to participate in underwater photography were satisfying to less than half of the divers surveyed. These features were considered to be of lesser importance to divers on the pre-dive survey (see figure 5.1).

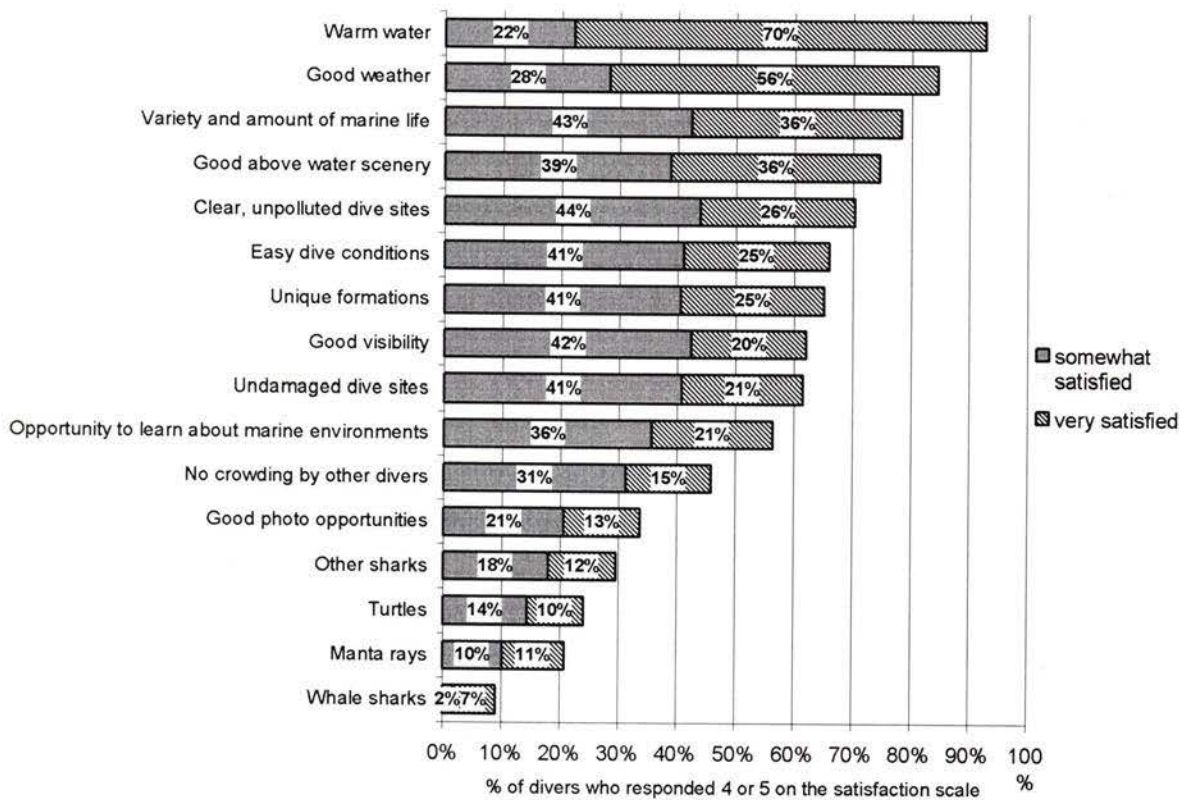
Figure 6.1. Satisfaction And The Reasons For Participating In Scuba Diving



6.1.2.2. Environment and Setting Features

Figure 6.2 shows that of the environment and setting features listed, divers were most satisfied with the warm water, good weather, variety and amount of marine life, and the above water scenery they experienced on their trips. Divers were less satisfied with the amount of crowding by other divers, and opportunities to view or experience large marine life such as sharks, manta rays and turtles on their dive trips. These features were satisfying to less than half of the survey respondents, however, they were considered important to more than two thirds of divers who completed the pre-dive survey (see figure 5.3).

Figure 6.2. Satisfaction With Environment And Setting Features



In addition to the mean satisfaction rating, a validity check was performed. Divers were asked to select the environment feature that they found to be most satisfying overall from the list provided. The five features that were selected most often by divers are presented in table 6.1.

Table 6.1. Environment And Setting Features Selected As Most Satisfying

Environment/Setting Feature	% of Divers who Selected as 'Most Satisfying'
Variety and amount of marine life	28.7
Manta rays	13.4
Warm water	8.9
Good weather	8.7
Clear, unpolluted dive sites	6.2

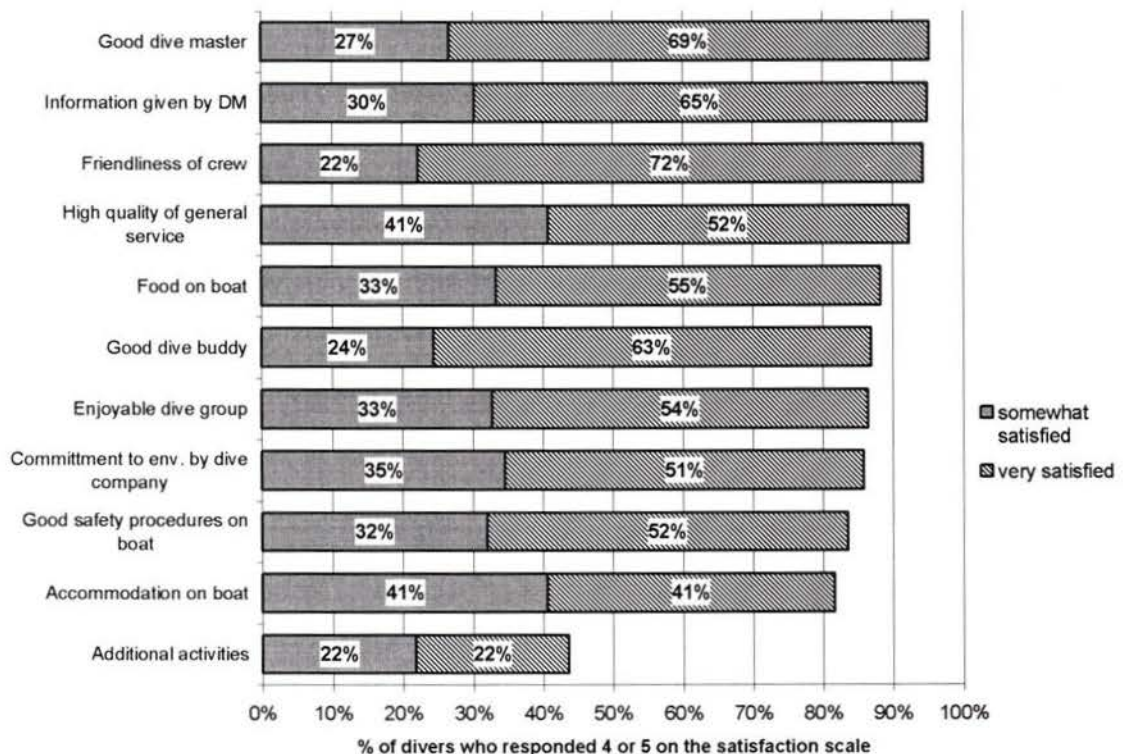
*does not total 100%- other features received less than 5% of the overall response.

The most satisfying dive trip environment features are similar for both measures, with the presence of warm water, good weather, variety and amount of marine life and clear unpolluted dive sites ranked in the top five for each. The ratings for manta rays are quite different between the two measures, which indicates that while encounters with manta rays on the dive trips were not common, when they did occur, they were clearly enjoyable and satisfying.

6.1.2.3. Service Features

With the exception of the additional activities provided on the dive trips, all service features were rated as satisfying by more than eighty percent of the divers surveyed (figure 6.3).

Figure 6.3. Satisfaction with Service Features



A validity check was also performed for the service features, and divers were asked to select the service feature that they found most satisfying overall from the list provided. The five features that were selected most often by divers are presented in table 6.2.

Table 6.2. Service Features Selected As ‘Most Satisfying’

Service Feature	% of Divers who Selected as ‘Most Satisfying’
Good dive master	21.0
Information provided by dive master	14.9
Friendliness of dive crew	13.2
Good safety procedures on boat	9.3
Good dive buddy	8.4

*does not total 100%. Other features received less than 5% of the overall response.

The responses to both measures of satisfaction are similar. The presence of a friendly dive crew and a good dive master who provides appropriate information were rated in the top three on both measures. While the provision of good safety procedures on the dive boat and having a good dive buddy were selected by divers to be the next most satisfying service aspects of the dive trip, such features were not ranked as high overall. However, it is important to point out that these results are relative, as divers indicated a high degree of satisfaction with each of the service features.

6.1.3. Satisfaction and Intent to Return

The recreation satisfaction literature suggests that satisfied customers provide companies with repeat business and share their experiences with others through positive recommendations (e.g. see Duke & Persia 1996, Oppermann 1998). In fact, some suggest that satisfaction is in fact the ‘intent to return’ (Haber & Lerner 1998). On the post-dive survey, divers were asked to indicate whether they would return to their chosen dive company in the future. Ninety percent of the divers surveyed responded that yes, they would return to the same dive company in the future. The remaining ten percent indicated they would either not return, or they were unsure. This indicates that the majority of divers were satisfied with the experience provided by their Phuket dive company.

Divers were also asked if they would return to Phuket for diving. Of the divers surveyed, seventy-one percent indicated they would return to Phuket for diving, while eight percent would not return, and twenty-one percent were unsure. These results appear to suggest that although the divers were satisfied with their dive companies, they were less satisfied with Phuket as a dive destination overall. However, there is an alternate explanation for this. Schmidhauser (1976,

cited in Oppermann 1998) classified tourists into two categories based on their destination choice history. The 'repeaters' exhibit loyalty to a destination or company when they have had a positive experience with it. The 'switchers' seek novelty and variety in their travel experiences, and constantly venture to new destinations. While repeat visitors are an indicator of satisfaction, it is important to acknowledge that very highly satisfied customers may not return simply because of their desire to experience new destinations (Oppermann 1998).

6.2. Disaggregate Results

To highlight differences in the responses of divers who took day trips and those who took liveaboards, the results are also provided in disaggregate form.

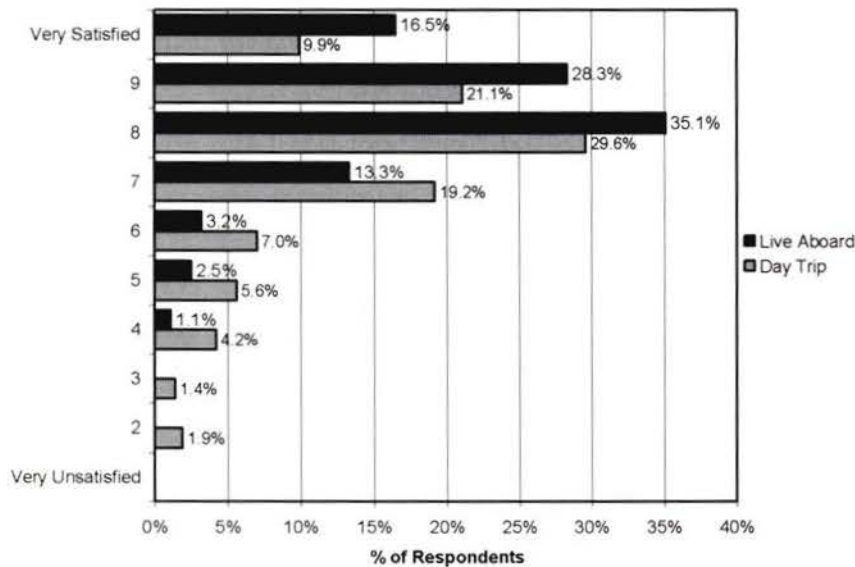
6.2.1. Diving Satisfaction and Trip Type

6.2.1.1. Overall Satisfaction

Both the physical and social environments differ between the day and liveboard dive trips. The liveboard trips offer more time for social interaction, and give divers the opportunity to experience numerous dive sites in more remote locations. Because the day trips utilize a small number of local sites within a short distance of Phuket, there is limited time for social interaction with other group members. However, during the dives there is often a large amount of interaction among divers due to the high level of visitation at the dive sites. It is reasonable that these characteristics may play a role in the satisfaction of the divers taking such trips. To determine if a significant difference in overall satisfaction exists between day and liveboard divers, a chi squared test was done. For the three measures of general satisfaction, liveboard dive trips were rated significantly higher than were day trips. Liveboard divers bestowed an average overall satisfaction rating of 8.29 (measured on a 10-point scale), which is significantly higher than the average score of 7.55 given by day trip divers ($\chi^2=30.984$, $df=8$, $sig=.000$) (figure 6.4).

When comparing the Phuket dive trip to their expectations, divers gave liveboard trips an average rating of 3.47 (on a five-point scale, where 1= much worse, 3= about the same and 5=much better), which is significantly higher than the rating of 3.34 given by day trip divers ($\chi^2=9.698$, $df=4$, $sig=.046$). In comparison to their previous dive experiences, divers who took liveboard trips gave a rating of 3.51, which is significantly higher than the rating of 3.25 given by divers who took day trips ($\chi^2=13.211$, $df=4$, $sig=.010$).

Figure 6.4. Overall Satisfaction: A Comparison Of Day Trip And Liveaboard Divers



6.2.1.2. Satisfaction with Specific Dive Trip Features

In addition to these measures of general satisfaction, day trip and liveaboard divers exhibited different degrees of satisfaction with the specific dive trip features. It is important to recognize that the type and intensity of the overall dive experience differs both between day and liveaboard trips, as well as between dive companies for each trip type. To determine if the differences in satisfaction between divers who took day and liveaboard trips were significant, chi squared tests were performed for each specific diving motivation and dive trip feature. Significant findings are displayed in table 6.3.

The satisfaction ratings given to various diving motivations by liveaboard divers are significantly higher than those given for day trips. Liveaboard divers indicated a greater degree of satisfaction with the opportunity to explore new environments, expand their knowledge, escape the demands of everyday life, partake in underwater photography, experience a special underwater feature, and spend time with friends and family.

Numerous environment and setting features received higher ratings from liveaboard divers than from day trip divers. Divers who took liveaboard trips were more likely to be satisfied with the underwater visibility, variety and amount of marine life, clear unpolluted dive sites, lack of crowding by other divers, presence of unique formations, whale sharks, other sharks, manta rays, turtles, good photo opportunities and the opportunity to learn about marine environment present at the dive sites they visited. Day trip divers indicated a higher degree of satisfaction with the easy conditions at the dive sites.

While satisfaction with the service features was generally high overall, divers who participated in liveaboard trips were more likely to be satisfied with several specific features than were divers who took day trips. Liveaboard divers were more satisfied with the friendliness of the boat crew, good dive master and dive buddy, enjoyable dive group, high quality of general service, and the additional activities provided on the boat. These findings are reasonable, as the multi-day liveaboard trips offer many opportunities for social interaction among dive group members. Day trip divers were more likely to be satisfied with the on-boat accommodation provided. While liveaboard divers spend an extended period of time on the boat, divers who take day trips make use of the on-boat accommodations for only a few hours. Thus, it is not such an integral part of their dive trip.

Table 6.3. Satisfaction With Various Dive Trip Features:
A Comparison Of Day Trip And Liveaboard Divers

Possible Reasons for Participating in Scuba Diving	Percent Responding 'Somewhat or Very Satisfied'				
	Day Trip	Live Aboard	chi ²	df	sig.
Interest in underwater photography	23.9	34.6	6.410	1	.011
Interest in special underwater feature	27.1	37.8	6.315	1	.012
Explore new environments	61.1	70.8	5.278	1	.022
Expand my knowledge	58.7	67.4	4.167	1	.014
To be with friends/family/associates	49.8	62.1	7.853	1	.005
Escape the demands of every day life	64.7	77.7	10.727	1	.001
<u>Environmental and Setting Features</u>					
Good underwater visibility	50.5	70.4	21.545	1	.000
Variety and amount of marine life	72.9	82.2	6.475	1	.011
Clear, unpolluted dive sites	66.4	73.3	3.913	1	.052
Easy dive conditions	72.3	61.4	3.728	1	.009
No crowding by other divers	33.6	54.8	22.959	1	.000
Unique formations	52.7	74.3	26.111	1	.000
Whale sharks	5.5	11.7	5.958	1	.015
Other sharks	21.8	35.3	11.122	1	.001
Manta rays	5.0	49.3	117.904	1	.000
Turtles	11.4	33.2	33.395	1	.000
Good photo opportunities	21.4	43.2	26.409	1	.000
Opportunity to learn about marine environment	50.9	60.4	4.638	1	.031
<u>Service Features</u>					
Accommodation on boat	86.2	78.3	5.345	1	.021
Friendliness of boat crew	91.4	96.4	6.001	1	.014
Good dive master	92.7	97.0	5.224	1	.022
Good dive buddy	82.0	90.4	7.852	1	.005
Enjoyable dive group	78.5	92.1	20.105	1	.000
High quality of general service	87.7	95.7	11.498	1	.001
Additional activities on the boat	32.0	52.0	18.919	1	.000

6.2.2. Diving Satisfaction: A Comparison Of New and Returning Divers in Phuket

The recreation satisfaction literature suggests that satisfied customers often provide companies with repeat business and share their experiences with others through positive recommendations (e.g. see Duke & Persia 1996). The high repeat visitor proportion of various holiday locales indicates that many tourists are faithful to a destination when they have had a positive experience with it (Oppermann 1998). That almost 40 percent of the divers surveyed for this study indicated previously diving in Thailand suggests that the region has provided satisfying dive holidays in previous years. Tourist demand is not independent of earlier travel experiences, and studies suggest that previous customer experiences lead to more specific demands, and more detailed expectations for future experiences (Oppermann 1998). While individuals may return to a specific location that they once enjoyed, the original experience can never be exactly duplicated.

The objective of this section is to compare the level of dive trip satisfaction of divers who had previously been diving in Thailand, and those who had not. Because repeat divers arrive with a different understanding of the area and a different set of expectations for their dive trip than divers visiting for the first time, it was important compare the satisfaction levels of the two groups.

6.2.2.1. Overall Satisfaction

Divers were asked to indicate their overall satisfaction with their dive trip on the post dive survey. Divers gave a mean satisfaction rating of 7.97 to their Phuket dive trip, on a ten-point scale. The average satisfaction scores of divers who had been diving previously in Thailand and those who had not were compared using a t-test for independent samples. The results indicate that the satisfaction ratings given by the two groups are significantly different ($t=-2.570$, $df=472$, $sig=.010$). Divers who had been diving in Thailand prior to this trip gave a mean satisfaction score of 7.69, which was significantly lower than the score of 8.16 given by divers who were new to the area.

When comparing their dive trip to their expectations, divers gave their experience a 3.41, on a five-point scale, where (1=much worse, 2=worse, 3=about the same, 4=better and 5=much better). A chi squared test was performed to determine whether a difference between new and return divers existed, and differences were found ($\chi^2=6.186$, $df=2$, $sig=.045$). First time divers were more likely to indicate their Phuket trip was better than expected, while return divers were more likely to indicate it was worse than expected (table 6.4).

Table 6.4. Diver Satisfaction With Dive Trip Compared To Expectations:
A Comparison Of First-Time And Return Divers To Thailand.

Phuket Dive Trip Compared to Divers' Expectations	Percent of Respondents	
	Return Divers	First-time Divers
Worse	14.5	9.3
About the Same	49.7	44.8
Better	35.8	45.9

$\chi^2=6.186$, $df=2$, $sig=.045$

Divers gave their Phuket trip a 3.40 in comparison to their previous dive experiences (also on a five-point scale, where 1=much worse, 2=worse, 3=about the same, 4=better and 5=much better). A chi squared test was performed to determine whether first time and return divers responded differently to this question, and differences were found. First time divers were more likely to indicate their Phuket experience was better than previous dive experiences, while return divers were more likely to indicate it was worse ($\chi^2=14.602$, $df=2$, $sig=.001$) (table 6.5).

Table 6.5. Satisfaction With This Dive Trip Compared To Previous Experiences:
A Comparison Of First-Time And Return Divers To Thailand.

Phuket Dive Trip Compared to Previous Dive Experiences	Percent of Respondents	
	Return Divers	First-time Divers
Worse	22.0	10.8
About the Same	41.9	38.7
Better	36.1	50.6

$\chi^2=14.602$, $df=2$, $sig=.001$

6.2.2.2. Satisfaction with Specific Dive Trip Features

Overall, it appears that return divers to Phuket are less satisfied with their dive experience than are new divers to the region. To determine whether similar results were present for the specific dive trip features, chi squared tests comparing the responses of new and return divers were completed. Numerous differences between groups were highlighted (table 6.6).

In each case, the level of satisfaction with specific features was lower for return divers than it was for first time divers in Thailand. The features that were rated significantly lower by return divers can be classified into three main categories, namely the opportunities to experience marine flora and fauna (e.g. variety and amount of marine life, clear, unpolluted, undamaged dive sites, wilderness/nature experience), learning opportunities (e.g. the opportunity to expand knowledge, develop and challenge dive skills, learn about the marine environment), and social

opportunities (e.g. no crowding by other divers, friendly dive staff, enjoyable dive group). These results, along with the overall measures of satisfaction, illustrate the various areas that did not live up to the expectations of the returning divers. The implications of these findings will be examined in the summary and discussion section at the end of the chapter.

Table 6.6. Diver's Dissatisfaction With Specific Dive Trip Features:
A Comparison Of First-time and Return Divers to Phuket.

Reasons For Diving	Percent of Divers Responding Unsatisfied or Neutral		chi ²	d.f.	sig.
	Repeat Divers	First Time Divers			
Interest in marine flora and fauna	25.9	14.5	9.56	1	.002
Wilderness / nature experience	40.3	25.3	11.875	1	.001
Looking for adventure	65.3	52.9	7.103	1	.008
To explore new environments	49.2	23.7	32.685	1	.000
To expand my knowledge	47.9	30.1	15.413	1	.000
To develop my dive skills	51.6	34.9	12.930	1	.000
To challenge my dive skills	64.6	55.0	4.207	1	.040
<u>Environment Features</u>					
Variety and amount of marine life	25.8	18.9	3.157	1	.050
Clear, unpolluted dive sites	35.6	26.0	5.035	1	.025
Undamaged dive sites	44.7	33.5	6.127	1	.013
Easy dive conditions	43.5	29.1	10.517	1	.001
No crowding by other divers	60.8	47.7	7.953	1	.005
Whale sharks	94.8	89.3	4.518	1	.034
Opportunity to learn about marine environment	51.3	38.7	7.311	1	.007
<u>Service Features</u>					
Information given by dive master	8.2	3.2	5.789	1	.016
Friendliness of boat crew	11.3	2.5	15.634	1	.000
Enjoyable dive group	17.4	10.7	4.520	1	.034

6.3. Satisfaction Models

Of all the attractions that Phuket has to offer divers, whale sharks are undoubtedly the most heavily marketed aspect of the Phuket dive experience. Pictures of these large creatures are displayed everywhere, including diving brochures, shop windows, websites, t-shirts, road-side art, and on the side of cars, trucks and boats. The presence of whale sharks and the opportunity to dive with the world's largest fish are considered by both divers and members of the dive industry to be a significant part of Phuket's appeal as a dive tourism destination. Many divers indicated on the pre-dive survey that whale sharks were among the most important aspects of their dive holiday. Analyses presented in chapter five and earlier in this chapter indicate that although

divers placed a high level of importance on the presence of whale sharks, the creatures were rarely encountered. Despite the rarity of such encounters and the resulting dissatisfaction with this feature, divers did not indicate that they were dissatisfied with their dive trips overall. Survey results suggest that while the perceived presence of whale sharks may serve to draw divers to Phuket, these large fish may not be necessary to diver satisfaction. These results warrant further investigation.

The objectives of this section are to assess whether the sources identified in the diving literature and those heavily marketed by the Phuket dive industry as key components of the dive trip experience are actually significant contributors to overall satisfaction; and to determine the dive trip features that are most influential at providing satisfying diver experiences.

To obtain an understanding of how divers in Phuket evaluate the quality of their dive experience, several satisfaction models were created. These models seek to highlight significant correlations between the importance of, and satisfaction with, individual dive trip features (source importance and source satisfaction) and overall satisfaction, and determine the characteristics of the Phuket dive experience most positively correlated with satisfaction overall.

6.3.1. Satisfaction Model Methods

The satisfaction models considered the correlation between overall satisfaction (OS), the importance of forty-one individual dive trip features, and the satisfaction with these features, in various combinations, for the purpose of determining which combination elicited the highest correlation, and thus, strongest relationship. The ultimate goal of this undertaking was to determine how much of the variability in overall satisfaction can be explained by the different combinations of independent variables. This investigation was modeled after a study by Dorfman (1979) on the measurement of camping satisfaction.

Two operational definitions of overall satisfaction were used. Divers were asked on the post dive survey to rate their satisfaction with the entire experience using a ten-point scale (Q1). This score served as the first definition, and will be referred to as OS1 (overall satisfaction definition #1). Divers were also asked to rate their satisfaction with the trip compared to their expectations (Q2), using a five-point scale, and their satisfaction with the trip compared to their previous dive experiences (Q3), also using a five-point scale. The scores for these two questions were doubled, (to ensure that they were given the same consideration as Q1, which used a ten-point scale), and combined with the overall satisfaction rating, for a total possible score of thirty $[Q1+2(Q2+Q3)]$. This second overall satisfaction definition will be referred to as OS2. These overall satisfaction definitions are summarized in figure 6.5.

Figure 6.5. Overall Satisfaction Definitions

$$\begin{aligned}
 \text{OS1} &= \boxed{\begin{array}{c} \text{Diver's evaluation of} \\ \text{the dive experience} \\ \text{on a 10-point scale} \end{array}} \\
 \text{OS2} &= \boxed{\begin{array}{c} \text{Diver's evaluation of} \\ \text{the dive experience} \\ \text{on a 10-point scale} \end{array}} + 2 \left(\boxed{\begin{array}{c} \text{Diver's evaluation of the dive} \\ \text{experience compared to their} \\ \text{expectations, on a 5-point scale} \end{array}} + \boxed{\begin{array}{c} \text{Diver's evaluation of the dive} \\ \text{experience compared to previous} \\ \text{experiences, on a 5-point scale} \end{array}} \right)
 \end{aligned}$$

The individual importance and satisfaction scores were used in various combinations as indicators of 'source satisfaction'. The pre-dive survey asked respondents to rate the importance of each specific dive trip feature on a five-point Likert-type scale, where 1=not at all important, and 5=very important. The post-dive survey asked divers to rate their satisfaction with each of the forty-one features on a five-point scale, where 1=very unsatisfied and 5=very satisfied. These satisfaction ratings were considered individually (referred to as SS1, or source satisfaction 1) and in combination with the importance scores (the pre-dive importance score multiplied by the post-dive satisfaction score, which is referred to as SS2, or source satisfaction 2). These source satisfaction definitions are summarized in figure 6.6.

Figure 6.6. Source Satisfaction Definitions

$$\begin{aligned}
 \text{SS1} &= \boxed{\begin{array}{c} \text{Source} \\ \text{Satisfaction} \end{array}} \\
 \text{SS2} &= \boxed{\begin{array}{c} \text{Source} \\ \text{Satisfaction} \end{array}} * \boxed{\begin{array}{c} \text{Source} \\ \text{Importance} \end{array}}
 \end{aligned}$$

Each individual source satisfaction score (SS1 or SS2) was then considered in conjunction with the overall satisfaction score (OS1 or OS2). Using the various combinations of these scores, six individual satisfaction models were constructed and are outlined in table 6.7.

Table 6.7. Satisfaction Model Descriptions

Satisfactio Model	Source	Overall	Variables Considered				
	Satisfaction Definition (SS#)	Satisfaction Definition (OS#)	Source Importance	Source Satisfaction	Overall Satisfaction	Satisfaction vs. Expectations	Satisfaction vs. Other Experiences
1	2	1	X	X	X		
2	1	1		X	X		
3	2	2	X	X	X	X	X
4	1	2		X	X	X	X
5	2	1	X	*	X		
6	2	2	X	*	X	X	X

* Source satisfaction for each feature was re-coded from the original 1 to 5 scale to a -2 to +2 scale. Using this technique, dis-satisfied ratings ('somewhat or very unsatisfied') would present as negative numbers, neutral responses (neither satisfied nor dissatisfied) would present as 'zero', and satisfied ratings would present as positive numbers when multiplied by the importance ratings.

6.3.2. Satisfaction Model Results

Pearson product-moment correlations were computed between the individual source satisfaction (SS1 or SS2) and the amount of satisfaction overall (OS1 or OS2). The resulting correlations indicate the relationship between each variable and overall satisfaction for each of the six models. The correlations obtained for each specific feature are presented in tables 6.8-6.10.

Table 6.8. Correlation Of The Six Satisfaction Models With Divers' Motivations For Participating In Scuba Diving.

Motivation for Diving	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	r	prob	r	prob	r	prob	r	prob	r	prob	r	prob
Interest in Marine Flora and Fauna	.391	.000	.561	.000	.400	.000	.586	.000	.521	.000	.531	.000
Wilderness / Nature Experience	.380	.000	.502	.000	.345	.000	.524	.000	.481	.000	.473	.000
To Expand My Knowledge	.284	.000	.398	.000	.331	.000	.447	.000	.375	.000	.425	.000
To Explore New Environments	.331	.000	.382	.000	.323	.000	.415	.000	.383	.000	.401	.000
To Develop My Diving Skills	.218	.000	.373	.000	.289	.000	.402	.000	.325	.000	.367	.000
To Challenge My Diving Skills	.164	.000	.288	.000	.191	.000	.319	.000	.243	.000	.260	.000
Looking for Adventure	.240	.000	.320	.000	.195	.000	.313	.000	.303	.000	.271	.000
Interest in Special Underwater Feature	.106*	.016	.219	.000	.185	.000	.306	.000	.200	.000	.281	.000
To Be With Friends/Family/Associates	.205	.000	.265	.000	.204	.000	.272	.000	.269	.000	.266	.000
Image of the Sport (glamor,adventure)	.146	.001	.274	.000	.151	.000	.266	.000	.246	.000	.229	.000
Social Activity	.247	.000	.273	.000	.218	.000	.257	.000	.290	.000	.280	.000
Interest in Underwater Photography	.084*	.046	.236	.000	.101	.023	.228	.000	.220	.000	.228	.000
Exercise	.108*	.013	.187	.000	.112	.000	.220	.000	.202	.000	.217	.000
Escape the Demands of Everyday Life	.092*	.029	.203	.000	.105	.017	.214	.000	.201	.000	.207	.000
All variables combined	.451	.000	.548	.000	.467	.000	.590	.000	.547	.000	.566	.000

*Correlation is significant at the 0.05 level (1-tailed). All other correlations are significant at the 0.01 level.

Table 6.9. Correlation Of The Six Satisfaction Models With Dive Trip Environment/Setting Features

Environment/Setting Features	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	r	prob	r	prob	r	prob	r	prob	r	prob	r	prob
Variety and Amount of Marine Life	.527	.000	.583	.000	.535	.000	.625	.000	.571	.000	.604	.000
Clear, Unpolluted Dive Sites	.403	.000	.457	.000	.440	.000	.496	.000	.429	.000	.471	.000
Undamaged Dive Sites	.360	.000	.386	.000	.411	.000	.456	.000	.373	.000	.437	.000
Good Underwater Visibility	.450	.000	.492	.000	.379	.000	.427	.000	.466	.000	.399	.000
Opportunity to Learn about Marine Environment	.289	.000	.391	.000	.288	.000	.413	.000	.328	.000	.352	.000
Unique Formations	.279	.000	.412	.000	.293	.000	.409	.000	.400	.000	.400	.000
Good Photo Opportunities	.158	.000	.297	.000	.188	.000	.300	.000	.273	.000	.285	.000
Other Sharks	.266	.000	.296	.000	.261	.000	.290	.000	.277	.000	.274	.000
Easy Dive Conditions	.205	.000	.273	.000	.250	.000	.287	.000	.278	.000	.306	.000
Manta Rays	.230	.000	.247	.000	.262	.000	.282	.000	.247	.000	.281	.000
No Crowding by Other Divers	.197	.000	.246	.000	.215	.000	.271	.000	.210	.000	.245	.000
Good Above Water Scenery	.202	.000	.287	.000	.208	.000	.220	.000	.287	.000	.260	.000
Turtles	.219	.000	.228	.000	.209	.000	.208	.000	.204	.000	.184	.000
Warm Water	.128	.004	.223	.000	.101*	.020	.169	.000	.221	.000	.169	.000
Whale Sharks	.151	.000	.152	.000	.139	.000	.160	.000	.134	.000	.126	.000
Good Weather	.147	.001	.178	.000	.100*	.021	.103*	.026	.202	.000	.131	.007
Sum of all Environmental Features	.526	.000	.611	.000	.538	.000	.621	.000	.602	.000	.614	.000

*Correlation is significant at the 0.05 level (1-tailed). All other correlations are significant at the 0.01 level.

Table 6.10. Correlation Of The Six Satisfaction Models With Dive Trip Service Features

Service Features	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	r	prob	r	prob	r	prob	r	prob	r	prob	r	prob
High Quality of General Service	.296	.000	.444	.000	.246	.000	.367	.000	.437	.000	.363	.000
Information Given by Dive Master	.337	.000	.356	.000	.308	.000	.327	.000	.391	.000	.357	.000
Enjoyable Dive Group	.253	.000	.360	.000	.220	.000	.309	.000	.359	.000	.311	.000
Good Dive Master	.320	.000	.373	.000	.278	.000	.307	.000	.390	.000	.329	.000
Good Safety Procedures on Dive Boat	.326	.000	.331	.000	.301	.000	.282	.000	.335	.000	.302	.000
Friendliness of Boat Crew	.317	.000	.317	.000	.253	.000	.262	.000	.362	.000	.287	.000
Good Dive Buddy	.230	.000	.274	.000	.220	.000	.261	.000	.305	.000	.280	.000
Commitment to Environment by Dive Shop and Boat Crew	.213	.000	.273	.000	.204	.000	.258	.000	.275	.000	.269	.000
Additional Activities on the Boat	.167	.000	.262	.000	.235	.000	.252	.000	.255	.000	.261	.000
Accommodation on Boat	.218	.000	.245	.000	.188	.000	.172	.000	.269	.000	.208	.000
Food on Boat	.210	.000	.243	.000	.167	.000	.137	.003	.269	.000	.177	.000
Sum of all Service Features	.423	.000	.502	.000	.378	.000	.418	.000	.491	.000	.418	.000

Correlations are significant at the 0.01 level.

To determine whether the features identified in the diving literature as key components of the dive trip experience were actually significant contributors to overall satisfaction with the Phuket dive experience, the correlation values for each separate feature were examined. Analysis of the results for the satisfaction models indicates that all forty-one individual dive trip features were at least slightly correlated with satisfaction, with correlations ranging from $r=.625$, $prob.=.000$ (Model four- variety and amount of marine life) to $r=.084$, $prob.=.000$ (Model one- interest in underwater photography). These results support the scuba diving literature (from which the lists of features were compiled), and verify that the features are important components of the dive trip experience, and do contribute to diver satisfaction. In light of this, it is not surprising that the largest correlations were obtained for many of the features considered most important to divers as key components of the dive experience (see chapter five).

Of the six models tested, number four (SS1 for each feature correlated with OS2) showed the strongest relationship between the individual diving motivation/ environment feature variables and overall satisfaction, and was thus selected as the basis for further analysis. Model four did not always convey the strongest correlation between overall satisfaction and satisfaction with the dive trip service features. However, because the satisfaction analyses presented earlier in this chapter indicated that the service features were generally satisfying overall, the selection of model four is still considered the most appropriate option. This model was used to identify the components of the dive trip that most significantly contribute to diver satisfaction, and is the basis of all further investigations.

Using model four, the ten features that most strongly correlated with the diver's overall satisfaction were:

1. Variety and amount of marine life	r=.625
2. Marine flora and fauna	r=.586
3. Wilderness/nature experience	r=.524
4. Clear, unpolluted dive sites	r=.496
5. Undamaged dive sites	r=.456
6. Opportunity to expand knowledge	r=.447
7. Good underwater visibility	r=.427
8. Opportunity to explore new environments	r=.415
9. Opportunity to learn about marine environment	r=.413
10. Unique formations	r=.409

These features can be classified into two basic categories: the characteristics of the diving environment (1, 2, 3, 4, 5, 7,10); and the opportunities to experience the marine environment provided by the dive company (6, 8, 9). These features are often discussed in the scuba diving and marine tourism literature (e.g. Tabata 1992; Davis & Tisdell 1995,1996; Moscardo 1999; Shafer *et al.*, 1999) as being important components of the diving experience. Clearly, the results presented here support such findings. Key to the sustainability of the Phuket dive industry is the ability of the environment to attract divers to the region, and satisfy them during their stay. The maintenance of the features that both attract divers and satisfy them is therefore critical.

So far, this analysis has considered the relationship between satisfaction and the dive trip attributes individually. While this investigation has been productive, and has confirmed what was suspected about the importance of various dive trip features in contributing to overall satisfaction, the analysis is incomplete. The literature contains some discussion of the role that individual features play in contributing to, and predicting, overall satisfaction. For example, Dorfman (1979) asked to what degree could satisfaction be explained in terms of separate aspects of an experience, while Peterson (1974) questioned whether overall satisfaction could be more accurately represented by the sum of satisfaction with the individual aspects of an experience. The literature (e.g. Ryan 1995; Oh 2001) suggests that overall satisfaction is a cumulative experience, and consideration of the attributes together, as part of the 'whole package' can reveal different findings than when features are considered individually.

This line of reasoning is relevant to this research, considering the analyses presented earlier in this chapter. Divers rated several features to be very satisfying although they were not considered important aspects of the dive trip initially. These features may not have been motivating influences for taking the dive trip, however, they appeared to ultimately enhance the

overall experience. To follow up on these findings, and investigate the idea of ‘cumulative satisfaction’, the sum of the satisfaction ratings was investigated for each of the six models (table 6.11)¹.

Table 6.11. Correlation Of Satisfaction Models With Dive Trip Features Combined.

Overall Analysis	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	r	prob	r	prob	r	prob	r	prob	r	prob	r	prob
Sum of all Reasons for Diving	.451	.000	.548	.000	.467	.000	.590	.000	.547	.000	.566	.000
Sum of all Environmental Features	.526	.000	.611	.000	.538	.000	.621	.000	.602	.000	.614	.000
Sum of all Service Features	.423	.000	.502	.000	.378	.000	.418	.000	.491	.000	.418	.000
Overall (Reasons for Diving + Environment Features + Service Features)	.590	.000	.686	.000	.598	.000	.686	.000	.678	.000	.670	.000

From table 6.11, it is evident that for each satisfaction model and each group of features (reasons for participating in scuba diving, environment features and service features), the combined sum yields a stronger correlation with overall satisfaction than does any individual feature. The correlation between overall satisfaction and the reasons for participating in scuba diving combined is $r=.590$, $prob=.000$, between overall satisfaction and the environmental features combined is $r=.621$, $prob=.000$, and between overall satisfaction and service features is $r=.418$, $prob=.000$. Moreover, when all dive trip features in each of the three groups are combined, the relationship is stronger still, with $r=.686$, $prob=.000$. This suggests that it is the dive experience as a whole, more so than any specific feature that results in the highest degree of satisfaction overall. This topic will be discussed in relation to diver and ecotourist specialization in section 7.4.

6.4. Summary and Discussion

These results provide a general assessment of Phuket's diving opportunities by highlighting the divers' level of satisfaction with the opportunities, experiences and services provided. The findings reinforce the idea that dive tourism and the physical environment are inseparable, and can be used as a reference point to improve Phuket's scuba diving opportunities.

The majority of divers were satisfied with the service features provided on the dive trip. With the exception of the additional activities on the boat, these features were satisfying to more than eighty percent of the divers surveyed. Many of the environment features, such as the presence of large marine life and the degree of crowding at the dive sites were unsatisfying to

¹ All six models are presented to illustrate the strength of the cumulative satisfaction results.

more than fifty percent of the divers surveyed, and almost forty-five percent were unsatisfied with the opportunity to learn about the marine environment.

Ultimately, the identification of less satisfying features is of particular relevance to marine resource and dive industry managers. These findings should be considered in management objectives and future actions to ensure that marine environmental quality is maintained, and positive diver experiences are provided. Improvement of less satisfying features would provide a dive experience that is more enjoyable overall while contributing to the sustainability of the dive industry.

The environmental and social settings present on liveaboard and day trips are distinct from one another, as discussed in chapter three. Just as the motivations of the divers on day and liveaboard trips differ (chapter five), differences are evident in their corresponding satisfactions. Overall, liveaboard divers indicated a higher degree of general satisfaction with their dive trip, and rated their trips higher compared to both their expectations and their previous dive trips than did divers who took day trips. Liveaboard divers also indicated a higher degree of satisfaction with specific opportunities (e.g. opportunity to escape the demands of everyday life, participate in underwater photography, explore new environments), environment features (e.g. variety and amount of marine life, underwater visibility, lack of crowding by other divers), and service features (e.g. enjoyable dive group, high quality of general service, additional activities on the boat) on the trip. When considered in context, these results are not surprising, and several potential explanations for this come to mind.

While day trip divers experience an average of two dive sites during their trip, liveaboard divers have the opportunity to see a variety of different dive sites over the course of their two to ten day trip. Because many sites are visited, each one with its own special features, it is not necessary for one or two dive sites to meet all the needs or satisfy all the expectations of the divers on liveaboard trips. Different expectations can be met by attractions at the various dive sites over the course of the trip, possibly contributing in a higher degree of satisfaction overall.

Because there are comparatively few day trip dive sites, these sites are heavily visited on a daily basis by a plethora of dive companies, fishing boats, snorkeling and sightseeing boats as well as private watercraft. These sites are generally more crowded than many of the liveaboard sites, and are collectively considered to be in less pristine condition, which may be partially responsible for the lower levels of satisfaction with many environment features. Many of the sites accessible for day trips are subject to a moderate to high amount of noise, congestion and dive boat refuse due to the high volume of visitation that they receive. Due to these factors, it is possible that dive experiences in these locations would be less of an 'escape' than at many of the

liveaboard sites, where boat staff often make a concerted effort to avoid other dive vessels during the dive trip.

Divers on the liveaboard trips reported a greater degree of satisfaction with several specific service features than did day trip divers. Liveaboard divers were generally more satisfied by their interactions with the people on their trip including their dive master, boat crew and dive group, which is not surprising given that they spend a great deal of time with these individuals over the course of the trip. In contrast, divers taking day trips spend only a minimal amount of time interacting with one another, the dive staff and crew.

The goal of this analysis was to identify specific features of concern at sites used for day trips, and liveaboard sites, particularly with regard to the environmental and social characteristics. The results indicate that specific management actions are required at the day trip dive sites. Improvement of the social (crowding and congestion, noise) and environmental conditions (variety and amount of marine life, presence of clear, unpolluted dive sites), and the learning opportunities on the day trips would provide a more satisfying diving experience. Management actions might include efforts to reduce the number of boats and divers present at the dive sites at a given time, and efforts to control pollution and litter at the dive sites (such as holding tanks on the boats, better garbage disposal systems). The implementation of a variety of education and interpretation programs on the boats may help to better satisfy the diver's learning desires. These findings are not meant to imply that improvements are not required at the liveaboard dive sites (and areas where attention is warranted were discussed in section 6.1). However, if Phuket's reputation as a world class diving destination is to be maintained, it is clearly evident that specific efforts are required to improve the experiences of day trip divers and the conditions at the dive sites.

The differences in satisfaction between divers who had previously dived in Thailand, and those who had not were examined in this chapter. Return divers would likely arrive with specific expectations for their dive trip, based on their previous experiences in Thailand, and their prior experiences would likely influence the nature of their satisfaction (Ryan 1995). The results suggest that these specific expectations were often not met, and overall, return divers were less satisfied with their Phuket trip than were divers new to the region. While acknowledging that the experience would no longer be 'novel' for return divers, and consequently, may be less satisfying, another explanation is plausible. It is possible that the expansion of Phuket's dive industry over recent years and the subsequent increase in dive travel to the area have resulted in a diving experience that is different than what the return divers were expecting, and that is ultimately less

satisfying overall. Comments from numerous return divers taking both day trips and liveaboard trips confirmed such changes.

Return divers who took liveaboard trips commented on increased crowding by boats and divers at the dive sites, the decline in the quality and quantity of marine life, particularly with regard to the disappearance of large marine life, and an increase in garbage at the dive sites.

Comments from divers who took liveaboard trips included:

“Too many divers at the same time”.

“There are too many divers at the dive sites, way more than in other years before this place was discovered by the masses”.

“Too many boats and divers are destroying the underwater life and the corals are dying. There are a lot of big boats and too much boat traffic. I have been diving here in 1998, 1999 and now this year. I was very sad when I saw things this year at the dive sites”.

“Not as much marine life as in previous years”.

“Marine life seems to be on the decline”.

“Less ‘big things’ than last time, less marine life”.

“Marine life less plentiful than I remembered”.

“There was a lot more trash at some of the dive sites than in previous years”.

“Fewer sharks than last time. Fewer fish in general”.

“No whale sharks this time. No large creatures at all, so now we have to appreciate the small creatures at the sites”.

Comments from return divers who took day trips focussed on the degree of crowding at the dives sites and the paucity of large marine life:

“Too many boats, too much noise underwater, many dead corals, a lot of damage to the reef”.

“Too many boats and divers at the dive sites. It was better last time when the sites weren’t so crowded”.

“The big fish are disappearing, the leopard sharks are gone”.

“Hardly any fish this time”.

“Need to limit divers at the sites each day- better for the marine life and better for the divers too”.

“Dive sites too crowded, not much marine life remains”.

The comments provided by return divers suggest that changes in the physical and social aspects of the Phuket dive experience have resulted in a ‘product’ that is less satisfying than it was in previous years. Clearly, the dive experience has changed as the dive industry has developed and the region has become more popular among divers from around the world. The

comments made by the repeat divers concur with reports from long-term members of the dive industry (i.e. those around for more than ten years), and highlight areas where attention should be directed. As diver visitation continues to increase, efforts to manage and mitigate the problems, particularly the crowding and degradation at the dive sites are required. To ensure satisfying experiences for both new and returning divers, these areas warrant further consideration and attention from resource and industry managers.

The satisfaction models were used to assess whether the features most commonly advertised by the dive industry are actually significant contributors to overall satisfaction, and to determine the dive trip features that are most influential at providing satisfying visitor experiences. While whale sharks and other large marine life are the most heavily marketed aspects of the Phuket dive experience and serve to draw divers to the region, the results suggest that these creatures may not be necessary to diver satisfaction. The satisfaction model analyses indicate that diver satisfaction with each of the forty-one individual dive trip features examined for this study is correlated with overall satisfaction, to varying degrees. Satisfaction with features such as the variety and amount of marine life, marine flora and fauna, a wilderness/nature experience, the presence of clear, undamaged, unpolluted dive sites and the opportunity to learn about marine environments and expand knowledge were most strongly correlated with the diver's satisfaction overall, indicating that such features are important components of the dive trip experience. These findings have implications for resource and dive industry managers. A critical element in the sustainability of the Phuket dive industry is ensuring that visitors are satisfied with their dive experience. The features that contributed most strongly to the diver's satisfaction were the very features that attracted divers to Phuket for diving in the first place. Thus, the maintenance of such features so that they can continue to attract divers and satisfy them during their dive holiday is critical to the future of this economically important industry.

While the maintenance of these features is important, the results do suggest that it is the dive experience as a whole, more so than any specific feature that results in the highest degree of satisfaction overall. Thus, it is important that resource and industry managers consider all of the dive trip features in their management objectives and activities. Clearly, the 'most important' features should not be maintained at the expense of everything else if the industry is to be sustainable.

Chapter 7. RESULTS- RECREATION SPECIALIZATION

The concept of 'recreation specialization' has been used as a tool for providing resource and industry managers with an improved understanding of the differences among recreationists participating in the same activity (McIntyre & Pigram, 1992). Because management directed solely at the 'average visitor' may not provide satisfying experience for all visitors, the recreation specialization framework categorizes participants in specific activities into more uniform subgroups (Bryan 1977). An important objective of this research was to apply the recreation specialization theory to scuba divers, and to relate this to the attitudes, expectations and satisfaction levels of the various groups. Two distinct specialization indices were developed: diver specialization and ecotourist specialization. The diver specialization framework places divers into sub-groups based on their previous diving experiences and participation in the sport, while the ecotourist specialization spectrum categorizes divers based on their environmental attitudes. Each framework will be discussed in turn, before examining their relationships with other variables. Observations made by the researcher during the dive trips, and relevant comments provided by divers on the pre and post dive surveys are included in the discussion to support the subsequent findings. To set the context for this analysis and discussion, a review of the relevant literature is provided.

7.1. Literature Review

7.1.1. Recreation Specialization

Recreation research has highlighted the range of different motivations, expectations and satisfactions that individuals have for participation in a particular leisure activity (e.g. see London *et al.*, 1977; Williams *et al.*, 1990). These systematic differences have been related to the inherent, individual differences in people, such as their history of past experiences, the social groups with which they participate, and their specific leisure needs (Dorfman 1979; Ryan 1995; Mannell 1997). Because providing high quality recreation opportunities requires that managers consider the variety and type of experiences desired by recreationists, identifying differences among participants in a given activity has been an important goal of recreation research (Wellman *et al.*, 1982; Williams *et al.*, 1990). When managing resources or planning leisure experiences that provide maximum user satisfaction, managers must consider the individual and group preferences, expectations, needs, desires and behavioral attributes of the visitors.

Bryan's (1977) classic study on the specialization of trout fishermen made a significant contribution to the field of leisure research, demonstrating the diversity of recreationists within a

leisure activity. Bryan found that a continuum of behavior ranging from general to specific existed among the fishermen, which was reflected in the type of equipment used and the level of skill displayed. He proposed that specialization was a developmental process, in which individuals progressed to higher stages of involvement the longer they participated in the activity. As the fisherman's degree of involvement increased, he moved along the continuum to more specialized stages, characterized by more specific motivations, behaviors, attitudes, values, expectations and resource preferences. The more specialized the fisherman became, the more his enjoyment was related to the specific resource setting. Through recreation specialization, Bryan suggested it is possible to gain an understanding of both the attitudes and the behaviors associated with particular recreation groups. These are recognized as important requirements of effective resource and recreation management.

Since Bryan's original work, recreation specialization research has been used to investigate and explain the variation in attitudes, preferences, motivations for participating, desires for facilities, settings, environmental attributes and satisfactions of participants in various recreation activities. Through the inclusion of several additional specialization variables, such as experience use history, which is the amount and extent of participation by the individual in a recreational pursuit (Schreyer *et al.*, 1984:34); centrality to lifestyle, which refers to the central role of the activity in the individual's life (Wellman *et al.*, 1982; McIntyre & Pigram 1992); and enduring involvement, which indicates the level of commitment and involvement that an individual sustains in a given activity (McIntyre 1989), this concept has been applied to a variety of recreational activities. Specialization frameworks have been proposed for groups such as whale watchers, campers, hikers, anglers, whitewater kayakers, hunters, boaters, birders and bridge players (e.g. see Wellman *et al.*, 1982; Schreyer & Lime 1984; Donnely *et al.*, 1986; Virden & Schreyer 1988; McIntyre 1989; Duffus & Dearden 1990; Ditton *et al.*, 1992; McIntyre & Pigram 1992; Keuntzal & Heberlein 1997; Miller & Graefe 2000).

A variety of variables have been used to develop these specialization frameworks. Generally, between one and twenty indicators are used to assign recreationists into between two and five groups, ranging from low to high specialization. While the specific variables used in each framework vary based on the objectives of the individual study, the inclusion of past experience, centrality to lifestyle and economic commitment/investment is widespread. Over time, as a recreationist progresses along the continuum from novice to expert, and obtains increasing amounts of skill and knowledge, these characteristics are expected to increase. Stronger personal and emotional ties to an activity develop as an individual becomes more specialized, exerting increasing influence on the individual's life (Keuntzel & Heberlein 1997).

Studies have shown a significant relationship between the level of specialization and a number of individual and trip characteristics, and the perception and desired outcomes of the recreation experience. Using the specialization theory, many researchers have examined the environmental or setting preferences of participants in various outdoor activities. Schreyer & Lime (1984) determined that more experienced recreationists are more specific about what they expect from the leisure experience and the environment that they choose. Virden & Schreyer (1988) found that highly specialized backpackers were more likely to prefer wilderness type settings for their activities, characterized by rugged terrain and low numbers of people, and free of obvious management interventions. Ditton (*et al.*, 1992) examined the behavior of anglers, and determined that high specialization anglers experienced significantly higher levels of resource dependency than did less specialization anglers.

McFarlane (*et al.*, 1998) suggest that as individuals gain familiarity and skill in an activity and progress through stages of development, they experience psychological changes as well. These changes can include motivations for participation, expectations, resource preferences, attitudes about management practices, and reactions to factors that might lead to dissatisfaction with the experience or conflict with other recreationists. Recreationists with a long history of involvement in an activity have been shown to have more clear and elaborate ideas about the settings they desire, and a greater understanding of the environment in general (Williams *et al.*, 1990). Over time, these individuals become more specialized in the way they carry out their activities. Research suggests that greater experience in various recreation activities often leads to greater specificity about the desired outcomes (McFarlane *et al.*, 1998).

Several research studies suggest that specialized recreationists are more sensitive to social stresses than are general recreationists. Wellman (*et al.*, 1982) examined behavior among canoeists and found that highly specialized recreationists were more sensitive to noise during their recreation experience than were less specialized individuals. Schreyer (*et al.*, 1984) looked at the attitudes and preferences of river floaters and found that those with greater amounts experience were more likely to report conflicts between users. Graefe (*et al.*, 1996) found that as recreationists became more specialized they preferred to encounter fewer people, and Manning (1985) reported that highly specialized individuals took more active measures to avoid certain types of users.

As the number of people in an environment increases, those with more experience have a sharper decline in satisfaction with crowding levels as compared to other users. Inglis (*et al.*, 1999) studied crowding in marine environments and found that the recreationalists who were more experienced and specialized were more sensitive to crowding and were less tolerant of

evidence of human influence than were novices. Strong ratings given to the absence of people in the marine environment suggest that feelings of solitude may be a significant component of the experience sought by experienced scuba divers and snorkellers, particularly those with more experience. This may be the case in Phuket. This research showed diversity in the environmental and social settings preferred by different visitors to coral reefs which is related to their individual preferences and past experiences with recreation in marine environments.

Although some research has been completed on the degree of crowding in the marine environment (e.g. Allen 1992; Mason & Moore 1998; Inglis *et al.*, 1999), research specific to the specialization of scuba divers, and the influence of specialization on other variables has not been undertaken.

7.1.2. Ecotourism Literature Review

The recreation specialization theory has relevance beyond its application to specific leisure activities, and is valuable in the study of both ecotourists and ecotourism operators. This section will provide a brief overview of the ecotourism concept and will discuss scuba diving as a form of marine ecotourism.

Ecotourism has been considered a product, a destination, an experience and a philosophy (Blamey 1997; Luzar *et al.*, 1998), and consequently, many equally diverse meanings of the word have been presented. Although no definition has been universally accepted, most imply support for conservation and describe ecotourism as being nature based, educative and sustainable. The Ecotourism Society defines ecotourism as 'responsible travel to natural areas, which conserves the environment and improves the welfare of the local people' (1991). They have perhaps best summarized the requirements of ecotourism, and suggest that it has four main components:

1. Travel to natural areas;
2. Travel that contributes to the conservation of the natural environment;
3. Travel that supports the wellbeing of local communities;
4. Travel that involves environmental education or interpretation for the participants.

(The Ecotourism Society 1991)

Throughout the 1990's, ecotourism became known as a way to help protect wildlife and fragile ecosystems, and benefit local communities by encouraging the use of natural resources for non-consumptive activities that are as profitable as other types of exploitation. Successfully managed, ecotourism can provide additional revenues to communities, and provide justification for managing natural resources for sustainable use. Presently, virtually every country in the

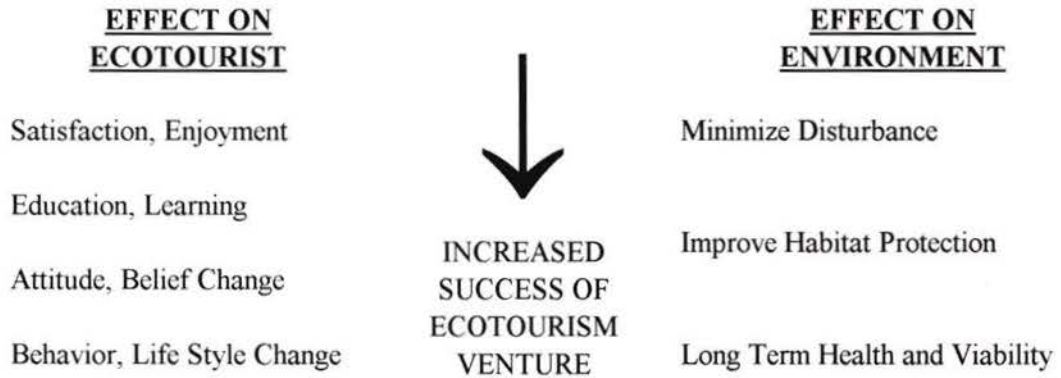
world is marketing some form of ecotourism (Honey 1999), and the Ecotourism Society suggests the growth in demand for such products ranges from ten to thirty percent annually, with no drop off expected in the near future (Ecotourism Society Website 2002).

In recent years the focus of ecotourism research has evolved from simply defining the term to the implementation of ecotourism principles in the real world. Many authors have noted a growing gap between ecotourism as defined on paper, and ecotourism in practice (Blamey 1997; Honey 1999; Ross & Wall 1999). Both the academic and non-academic literature present a wide range of ecotourism opportunities and products. At one end of the spectrum are endeavors that take active and intensive measures to conserve the natural environment and support local communities. At the other end are tourism ventures that pay little heed to the ecotourism principles involving local communities, conservation, and tourist education, where the use of the word 'ecotourism' is simply just a marketing ploy designed to take advantage of the 'greening' of our society (Orams 1995; Honey 1999).

Several studies have indicated that a variety of ecotourism specialization spectrums exist, and generally classify ecotourism businesses in terms of their commitment to the environment and their adherence to various ecotourism principles (Orams 1995). These spectrums have been termed 'shallow and deep ecotourism' (Acott *et al.*, 1998); 'light and sound ecotourism' (Honey 1999); 'passive and active ecotourism' (Orams 1995); and 'casual and hardcore nature tourism' (Burton 1998). Honey (1999) suggested that specialized ecotourism is distinct from other forms of ecotourism because in addition to considering the type of activity provided, focus is placed on the impacts of the activity, and the responsibility of the tourist industry to minimize these impacts. Orams (1995) proposed that rather than simply being enjoyable, a true ecotourism experience will incorporate learning about the local physical and social environments, which will eventually lead to attitude and behavior changes in the tourists, and contribute to the long term health and viability of the tourism environment (see figure 7.1)

Orams suggested that a framework for assessing ecotourism operators would be a useful tool for clarifying the location of the operators within the wider field of ecotourism (Orams 1995:6). The use of such a framework for evaluating the provision of ecotourism activities by the Phuket diving operators will be discussed in upcoming sections.

Figure 7.1. The Optimal Ecotourism Experience



Adapted from Orams, 1995

Ecotourism can be evaluated with reference to both the nature of the activity, and the characteristics of the participants. The assumption that all people who participate in certain activities or visit natural, outdoor settings are ecotourists is erroneous. While some early studies (e.g. Weaver 1993) suggested that ecotourists could be identified by the activities they partake in, more recent studies (e.g. Orams 1995; Wight 1996) have recognized that this is not necessarily true, as other variables are involved. Positive environmental attitudes are significantly and positively correlated with one's likelihood of being an ecotourist, and participating in ecotourism activities (Luzar *et al.*, 1998). Ecotourists are likely to remain ecotourists regardless of where they vacation, and non-ecotourists are unlikely change their attitudes simply because they visit an ecotourism destination (Acott *et al.*, 1998). Thus, to identify ecotourists, it is necessary to examine both the behaviors and attitudes of individuals to determine what is important to them in their tourism experiences, (Palacio & McCool 1997).

Several studies have suggested that the motivations and preferences of 'ecotourists' differ significantly from those of other travelers (Kretchman & Eagles, 1990; Eagles 1992; Crossley & Lee 1996; Wight, 1996; Masberg & Savige, 1996; Chirgwin & Hughes, 1997; Palacio & McCool 1997; Acott *et al.*, 1998; Ballantyne *et al.*, 1998; Hunt 1998; Hvenegaard & Dearden, 1998; Meric & Hunt 1998). Using survey research, many of these researchers have sought to differentiate ecotourists from other tourist types based on their attitudes, motivations and behavior. Other researchers, such as Duffus and Dearden (1990) recognized that ecotourists are not homogeneous, and took the process a step further by segmenting ecotourists into subgroups. As a thorough understanding of ecotourist motivations is essential to the development of ecotourism management strategies, the visitor's attitudes, behavior, activities and the benefits

they expected to receive from the experience provided the basis for these studies (Kretchman & Eagles, 1990; Palacio & McCool 1997).

Ecotourists are drawn by different features of a destination than are general travelers, and have different motivations, expectations, desired benefits, and travel priorities. Eagles (1992) found that while the ecotourist's travel motives were focussed on the natural environment, the general tourist's motivations related more to relaxation and family. Features identified as being more important to ecotourists than other tourists in locations throughout the world include the opportunity to visit uncrowded destinations, experience remote and unspoiled nature/wilderness settings, view unusual or rare flora and fauna, learn and increase knowledge about nature, culture and wildlife, interact with native people and financially support local communities (Crossley & Lee 1994; Blamey 1997; Meric & Hunt 1998; Diamantist & Ladkin 1999). The importance of quality guides was also significantly greater for ecotourists than other tourists (Wight 1996), which relates directly to the learning component of the ecotourism experience. Interestingly, water based activities, particularly in natural, wilderness settings, were found to be very important to ecotourists (Lee 1996; Wight 1996).

Thus, based on the conditions required of an 'ecotourism experience', and the characteristics of the individuals most likely to be termed 'ecotourists', can scuba diving be considered a form of marine ecotourism, and divers, 'marine ecotourists'? The nature of the sport certainly implies some degree of desire for the conservation of the marine environment. Diving can provide divers with excellent opportunities to closely experience, interact with, and learn about the underwater marine flora and fauna, and, diligently implemented, can provide a sustainable alternative to non-renewable uses of coral reefs, which are among the most threatened and endangered ecosystems in the world (Sweeting 1995).

The very nature of scuba diving suggests that it is a form of marine ecotourism, while the 'importance' results from chapter five indicate that most divers have some of the characteristics common among ecotourists. As previous sections highlighted, however, divers are not homogeneous. While diving may appear to be a marine ecotourism activity, it is unlikely that all people involved in diving are true marine ecotourists. This question will be developed in greater detail in the upcoming results section.

7.2. Diver Specialization

7.2.1. Methods: Framework Design

A diver specialization framework was designed to obtain an understanding of the differences between divers and the range of diving opportunities desired. This framework was

based on responses to a specialization index consisting of items that have been linked in the literature to the degree of specialization. Three levels of specialists were identified. A broad list of variables integrating the previously described experience use history, skill level and training, centrality to lifestyle, enduring involvement, equipment and economic investment, was used to create the index of diver specialization. These variables were measured using twelve questions on the pre-dive survey. These questions fell into three categories:

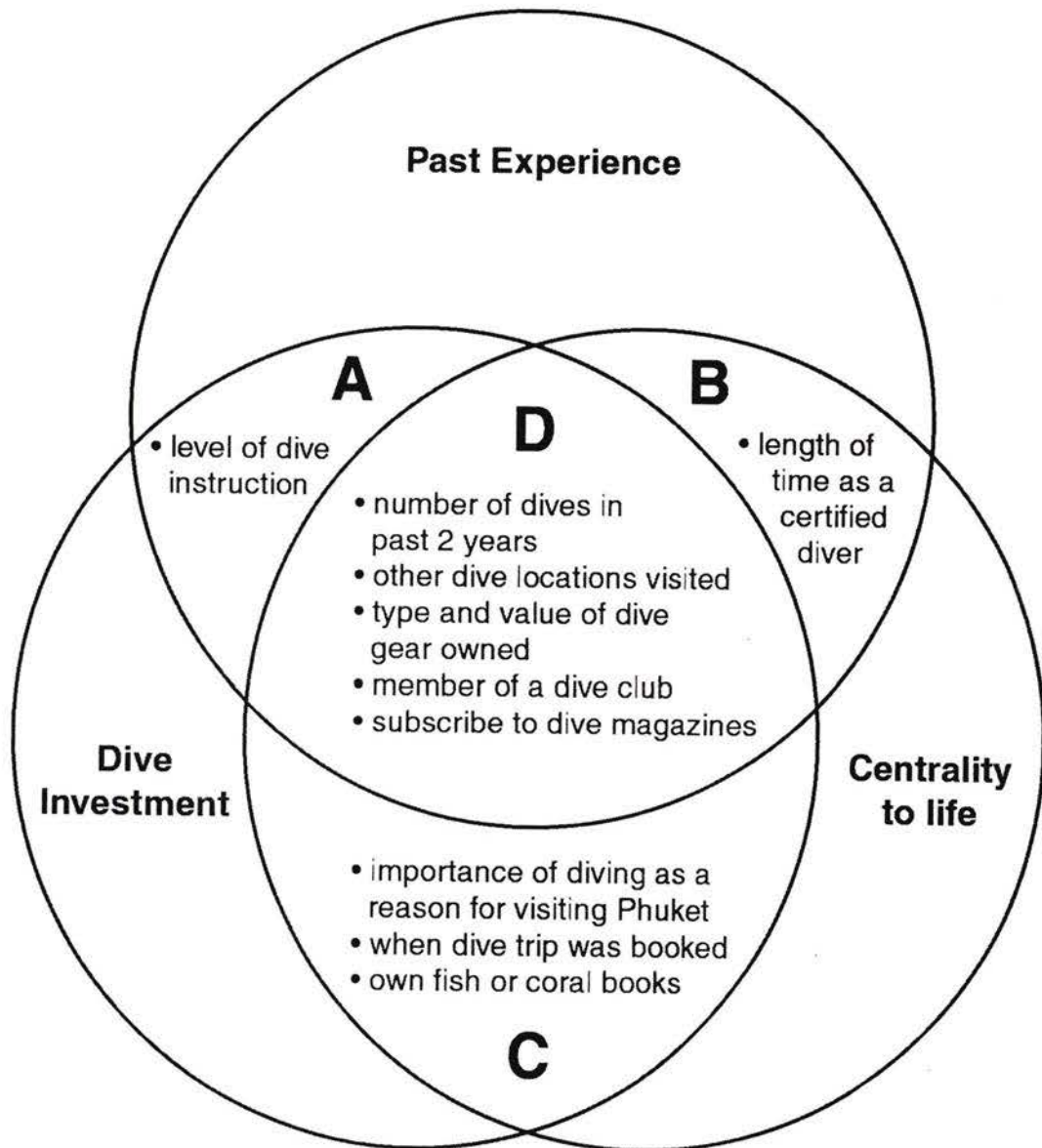
- Past diving experience: the amount, variety and type of diving experience
- Investment in diving: how much divers have invested in diving overall, both financially and in terms of time and effort.
- Centrality of diving to life: the role that diving plays in the lives of the divers overall.

In previous specialization frameworks, these categories were considered individually. However, because each of the twelve questions considered in this analysis related to at least two of these three categories, a multi-dimensional framework using inter-related categories was used to create the specialization index (figure 7.2).

The specific questions that were used as possible indicators of diver specialization are illustrated in figure 7.2. Indicators in section A are associated with the 'Investment in Diving' and 'Past Diving Experience' spheres. Section B holds those most closely related to the 'Past Diving Experience' and 'Centrality to Live' spheres, while those present in section C are closely associated with the 'Investment in Diving' and 'Centrality to Life' categories. Section D includes indicators that are closely related to all three of the specialization dimensions considered in this project.

To develop the index of diver specialization, divers were grouped into more uniform subgroups based on their responses to the indicator questions (modified from Bryan 1977). Between two and five subgroups were created for each question. After further examination and analysis of these groups in conjunction with the specialization and scuba diving literature, they were then further collapsed into two categories, as illustrated in table 7.1. The specific questions considered in the development of the diver specialization framework are discussed below.

Figure 7.2. Considerations For The Diver Specialization Index.



Section A

The level of dive instruction was addressed by asking divers to indicate the dive courses they had previously taken, with the idea that divers would become more skilled over time, and thus, more specialized. The subgroups used were 'Discover Scuba Diving and/or Open Water Diver', 'Advanced Open Water Diver and/or Rescue Diver', 'Dive Master', and 'Instructor'. These sub-groupings were further collapsed into two categories for use in the framework. Divers who had only taken the basic 'Discover Scuba Diving' or 'Open Water Diver' courses were grouped together, and those who had obtained higher levels of certification were classified separately (see table 7.1)

Section B

To determine the length of time as a certified diver, individuals were asked to indicate the year in which they first became certified. The literature suggests that divers would become more specialized over time, thus, divers who were recently certified were considered less specialized than those certified for a longer period. The cut-off period for this indicator was set at two years- divers who had been certified for up to two years were grouped together for the purpose of the framework, as were divers certified three or more years (see table 7.1). This was based on the principle of 'enduring involvement' whereby individuals who participate in an activity over a period of time are perceived to display commitment to the activity (Wellman *et al.*, 1982; McIntyre 1989), thus illustrating that their participation is not a 'passing fancy'. Divers certified for two years or less were grouped together, as were those who had been diving for three years or longer.

Section D

The number of dives individuals had completed in the two years preceding the survey was used as an indicator of the amount of past dive experience, the degree of investment in diving and the degree of importance the sport plays in the individuals life (centrality to life). Divers were asked to check on the list provided the number of dives they had completed in the two years preceding their Phuket dive trip. The categories were zero dives, one to five dives, six to fifteen dives, sixteen to twenty-five dives, twenty-six to thirty-five dives, and more than thirty-six dives. For the dive specialization index the results were further collapsed, and divers who had completed five or fewer dives were grouped together. Individuals who had completed six or more dives were considered more regular divers, and were grouped together on this basis (see table 7.1).

The number of other dive destinations visited by an individual was used as an indicator of the three specialization dimensions, with the idea that more specialized, committed divers would likely visit a variety of different dive destinations over time, thus committing time, energy and money to the sport. Divers were asked to check off the locations throughout the world in which they had been diving prior to this dive trip. Individuals who had visited zero or one dive destination (other than Phuket) were grouped together, as were divers who had been diving in two or more other dive locations throughout the world (see table 7.1).

Table 7.1. Classification Of Diver Specialization Indicators

Diver Specialization Indicators	0	1
Level of dive certification	Discover Scuba Diving and/or Open Water Diver only	Advanced Open Water or higher
Length of time as certified diver	Less than 2 years	3 years or more
Number of dives in last 2 years	5 or fewer dives	6 or more dives
Other dive locations visited	0 or 1 other dive location visited	Has visited 2 or more other dive locations
Dive Gear Owned	No dive gear Basic dive gear (snorkel, mask, fins)	Standard gear (BCD, regulator, computer) Specialized gear (UW camera or video)
Own coral or fish field guides	No coral field guide or books No fish field guide or books	Owens coral field guide or books Owens fish field guide or books

The type of dive gear owned by respondents was investigated for this framework based on the premise that as divers become more experienced and diving takes on a more important life-role, they would display a greater personal and financial commitment to diving by purchasing their own diving equipment. The amount and type of diving equipment owned by divers was classified into four categories- 'no dive gear', 'basic dive gear' (snorkel, mask and fins¹), 'standard dive gear' (buoyancy control device-BCD, regulator, dive computer), and 'specialized dive gear' (underwater still camera or underwater video camera). The results were re-grouped, and divers who owned no gear or basic dive gear were grouped together, as were divers who owned standard or specialized gear (see table 7.1).

Whether divers subscribed to dive magazines and belonged to a dive club were used as multi-dimensional specialization indicators with the idea that over time, divers would become more interested, committed and socially involved in the sport. Divers responded to these questions by checking yes or no. The dive magazine variable results were imprecise, as many divers indicated purchasing magazines occasionally though they did not have a home

¹ Synonymous with snorkeling gear. Shackley (1998) suggests that most divers begin as snorkellers, and those who have good initial experiences may eventually develop into highly specialized divers.

subscription. Membership in a dive club appears to be a predominantly European phenomena, and this group of divers was significantly more likely to belong to a club than divers from elsewhere in the world. Thirty-seven percent of the divers surveyed were European, yet almost seventy percent of the dive club memberships were reported by divers from this region. Due to these inconsistencies, these two items were eliminated from the specialization framework prior to completion.

Section C

The importance of diving as a reason for visiting Phuket and the time when the dive trip was booked were used as indicators of the level of investment in diving, and the centrality to life that the sport plays. Divers who indicated that diving was the main reason for traveling to Phuket or a planned activity on their visit, and those who arranged their dive trips prior to arrival were perceived to be more committed to the sport than those who indicated diving was an unplanned activity and who booked their trip upon arrival. Examination of the survey comments provided by divers highlighted some regional inconsistencies to these questions. Members of dive clubs often indicated that their Phuket dive trip was organized by the club prior to their arrival, however, aside from paying the deposit, they were not actively involved in the process. Due to previously discussed regional variation in dive club membership, this situation applied overwhelmingly to European divers. Thus, the importance of diving as a reason for visiting Phuket and the time when the dive trip was booked were deleted from the framework prior to completion when their relationship to dive club membership was identified.

Finally, on the premise that individuals who are more interested, invested and committed to diving would be more likely to own books and literature on marine flora and fauna, the ownership of fish and coral books was used as a specialization indicator. Divers were asked to indicate if they owned coral or fish field guides or books. Those who indicated they did own such books were grouped together, while those who did not were also grouped together (see table 7.1).

Individuals were rated for diver specialization using a binary scale. If they satisfied the requirement for a particular indicator feature, they were given a score of one, while if they did not, they were assigned a zero for that feature. A similar technique was successfully used by Donnelly, Vaske and Graefe (1986) in the creation of a specialization framework of boating related activities. The individual scores were totaled, and table 7.2 shows the percent of divers who obtained each specialization rating score. Based on these scores, divers were assigned to either the low, medium or highly specialized group (table 7.3)

Table 7.2. Distribution Of Scores For The Diver Specialization Framework

Specialization Rating Score	Percent of Divers
0	7.5
1	4.2
2	9.1
3	14
4	12.8
5	21.7
6	14.8
7	15.8
	100%

Table 7.3. Distribution Of Diver Specialization Groups

Diver Specialization Rating	Percent of Divers	Number of Divers
Low (0-3)	34.8	176
Medium (4-5)	34.6	175
High (6-7)	30.6	155
	100%	506

7.2.2. Results

The diver specialization framework was used with to the importance and satisfaction results previously discussed (chapters five and six) to highlight differences between specialist groups and explain variation in the importance and satisfaction results. Overall, the results indicate that divers are not a homogeneous group sharing the same attitudes, expectations or behavior. The relationships between the degree of diver specialization and the other variables will be discussed in this section.

7.2.2.1. Diver Specialization and Trip Type

The differences in the motivations, the importance of various features, and the satisfactions of divers taking day and liveaboard dive trips were previously discussed in the context of the resource and industry management requirements for the dive sites. To determine the contribution that specialization might make in the understanding of these differences, the relationship between trip type and degree of diver specialization was examined.

The results indicate that significant differences exist in the composition of day and liveaboard trips with regard to diver specialization ($\chi^2=26.984$, $df=2$, $sig.=.000$). Almost one

half of the divers surveyed on the day trips fall into the low diver specialization category, compared to only slightly more than one quarter of those surveyed on liveaboard trips. Considerably more divers fall into the medium and high categories on liveaboard than on day dive trips, as illustrated in table 7.4.

Table 7.4. The Distribution Of Diver Specialization Groups:
A Comparison Of Day And Liveaboard Dive Trips

Level of Dive Specialization	Day Trip		Liveaboard	
	%	(n)	%	(n)
Low	48.5	96	26.0	80
Medium	26.8	53	39.6	122
High	24.7	49	34.4	106
Total	100%	198	100%	308

$\chi^2=26.984$ $df=2$ $sig=.000$

These findings support the recreation specialization literature that suggests that more specialized recreationists have more specific resource requirements (e.g. Bryan 1977; Williams *et al.*, 1990). In the context of diving, this might relate to the desire to experience pristine coral reefs. Shackley (1996) suggests that experienced recreationists are likely to demand high levels of resource and service quality in order to gain high levels of satisfaction. Mannell (1997) adds that individuals with a history of participation in an activity have undergone a socialization process, and have learned what is required to satisfy their needs. These individuals will have more specific expectations and will actively seek situations and settings that they feel will be satisfying to them.

As previously discussed, the environmental and social conditions at the dive sites vary greatly between the day and liveaboard trips. The liveaboard sites are considered more pristine and in much better condition than those sites commonly used for the day trips. The liveaboard sites are also considered to be significantly less crowded, making the highly sought after wilderness experience more likely than on the day trips. Based on these considerations, it is reasonable that specialized divers would be more likely to choose the liveaboard trips over day trips, as they perceive these environments and settings as being more able to provide them with the experiences they desire.

7.2.1.2. Diver Specialization and Importance

Because of the variation in diving experience, training, knowledge, and personal interests, it is almost certain that the level of importance placed on certain dive trip features

would differ between diver specialization groups. To determine whether significant differences in the importance placed on various diving motivations or trip features exist between groups, chi squared tests were performed. Numerous differences between low, medium and high diver specialization groups were identified. Analysis of the results indicate that low, medium highly specialized scuba divers do have different expectations for their dive trip, and place different levels of importance on specific features. In many instances, a shift in preferences and expectations is evident as one proceeds along the dive specialization continuum. Significant differences are displayed in table 7.5.

Reasons for Participating in Diving

The marine flora and fauna present at the dive site became more important as the level of specialization increased, as did the opportunity for underwater photography. The opportunities to explore new environments, expand knowledge, and develop and challenge diving skills became less important as the level of dive specialization increased. Thus, there is a clear shift in the priorities of divers at different specialization levels. Less specialized divers are focussed on the somewhat basic aspects of the sport, and place importance on improving their knowledge and dive skills. Highly specialized divers, however, are focussed on more specific aspects of the sport, such as underwater photography.

Reasons for Diving in Phuket

The Similan's reputation as one of the world's best dive locations became more important as the level of specialization increased, while the perception that Phuket was an inexpensive place for a dive holiday became less important as specialization increased. The probability that divers had been diving in Phuket prior to this trip increased with specialization, so it is likely that the more specialized divers realized that Phuket was not necessarily inexpensive prior to their arrival.

Environment and Setting Features

The importance of good photo opportunities, the presence of whale sharks and manta rays, and a lack of crowding by other divers increased with specialization, while the importance of good weather, good above water scenery and easy dive conditions decreased. It is interesting that the features more important to highly specialized divers are actual aspects of the diving experience, while two of the three features identified as being more important to less specialized divers, good weather and above water scenery, are actually aspects of the dive trip experience.

Service Features

As the level of diver specialization increased, a good dive master, the information provided by the dive master and the additional activities on the boat became less important. Divers clearly became more focussed on diving as specialization increased, and became less dependent on the guidance of dive staff and non-diving activities. Interestingly, the commitment to the environment by the dive shop and crew was most important to less specialized divers and least important to the medium specialized divers.

Table 7.5. The Importance Of Various Dive Trip Features:
A Comparison Of Low, Medium And Highly Specialized Divers.

Reasons for Diving in Phuket	% of Each Specialization Group Responding 'More Important'			chi ²	df	sig
	Low	Medium	High			
Holiday	68.4	76.3	54.7	17.114	2	.000
Similan's reputation as a top 10 dive site	59.6	62.7	72.4	6.078	2	.048
Inexpensive dive holiday	45.0	33.1	34.4	5.965	2	.051
Return Visit to Phuket	27.7	29.1	45.9	11.549	2	.003
Opportunity to dive in unique environment	78.9	59.5	64.5	15.780	2	.000
<u>Reasons for Participating in Diving</u>						
Marine flora and fauna	75.9	86.9	88.3	11.351	2	.003
Looking for adventure	52.6	37.3	40.9	8.748	2	.013
Interest in underwater photography	17.6	28.7	40.5	20.652	2	.000
Interest in special underwater feature	17.8	35.3	32.0	14.377	2	.001
Explore new environments	75.9	64.9	61.7	8.462	2	.015
Expand my knowledge	76.2	65.1	59.1	11.178	2	.004
Develop my diving skills	76.2	54.4	46.8	32.071	2	.000
Challenge my diving skills	39.0	32.3	20.1	13.768	2	.001
<u>Environment Features</u>						
Variety and amount of marine life	97.7	94.2	98.7	6.005	2	.050
Undamaged dive sites	97.1	91.8	97.4	7.453	2	.024
Easy dive conditions	60.5	38.8	28.1	36.459	2	.000
No crowding by other divers	80.9	78.9	88.8	6.027	2	.049
Good above water scenery	58.7	47.6	47.1	5.801	2	.055
Whale sharks	62.2	76.5	79.1	13.745	2	.001
Manta rays	68.8	81.8	81.7	10.736	2	.005
Good photo opportunities	25.9	36.7	50.3	20.497	2	.000
<u>Service Features</u>						
Information given by dive master	96.5	90.1	86.2	10.984	2	.004
Good Dive Master	96.0	95.9	88.8	9.107	2	.011
Commitment to environment by company	93.1	80.1	89.5	13.959	2	.001
Additional activities on boat	52.9	25.4	25.5	36.723	2	.000

7.2.1.3. Diver Specialization and Satisfaction

To determine whether low, medium and highly specialized divers experience different levels of overall satisfaction with their dive trip, Analysis of Variance tests were performed on the post-dive mean scores of the three groups. ANOVA tests comparing satisfaction against expectations and satisfaction against previous dive experiences were also completed for the three groups. The results indicate significant differences (table 7.6). The relationship between the level of diver specialization and the three measures of overall satisfaction with the dive trip appears to be inverse, as specialization increases, the mean satisfaction rating decreases. Less specialized divers rated their Phuket dive trip significantly higher than did medium and highly specialized divers. Less specialized divers also rated their dive trip higher than other divers in terms of satisfaction with the trip compared to their expectations, and compared to their other dive experiences.

Table 7.6. Satisfaction With The Phuket Dive Experience:
A Comparison Of Low, Medium And Highly Specialized Divers.

Satisfaction Measure	Diver Specialization Group (mean)			d.f.	f.	sig.	Significant Difference?		
	Low (L)	Medium (M)	High (H)				L-M	M-H	L-H
Overall satisfaction	8.36	7.81	7.70	394	6.587	.002	*		*
Experience vs. expectations	3.74	3.31	3.16	418	17.406	.000	*		*
Experience vs. other dive experiences	3.61	3.40	3.12	406	9.670	.000		*	*

To determine if similar relationships exist for the specific diving motivations and dive trip features, chi squared tests were performed, and numerous differences between groups were highlighted. Significant results are displayed in figures 7.3 and 7.4 (sig.=.05). For ease of illustration and interpretation of these figures, the categories 'somewhat satisfied' and 'very satisfied' ('4' and '5' on the satisfaction rating scale) are grouped together.

Figure 7.3. Satisfaction With The Reasons For Participating In Scuba Diving: A Comparison Of Low, Medium And Highly Specialized Divers.

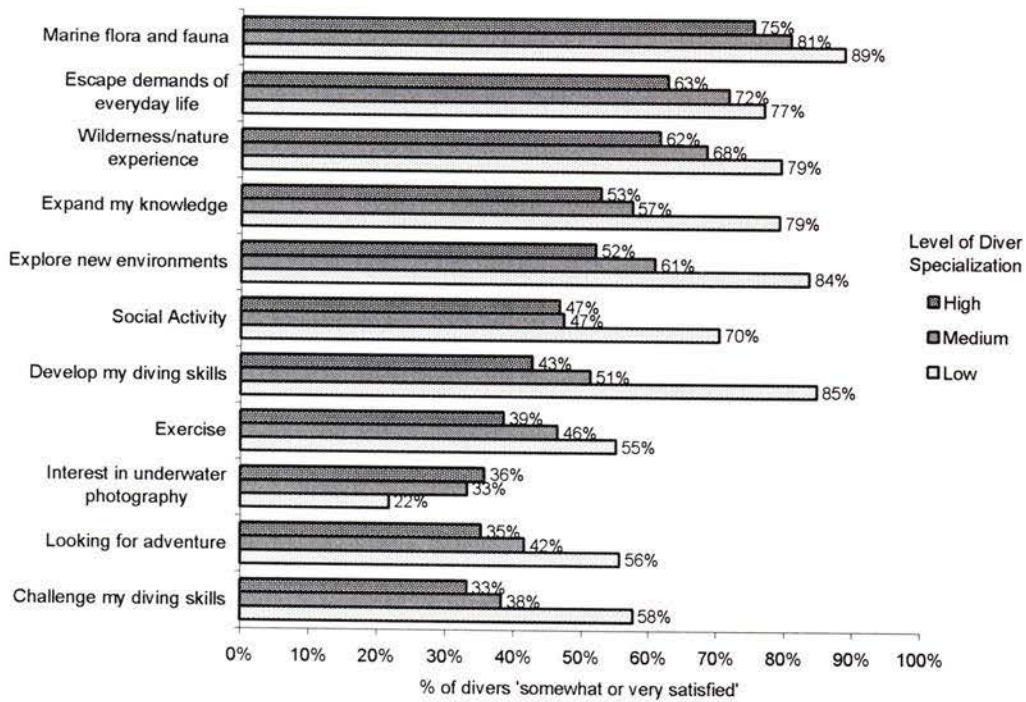
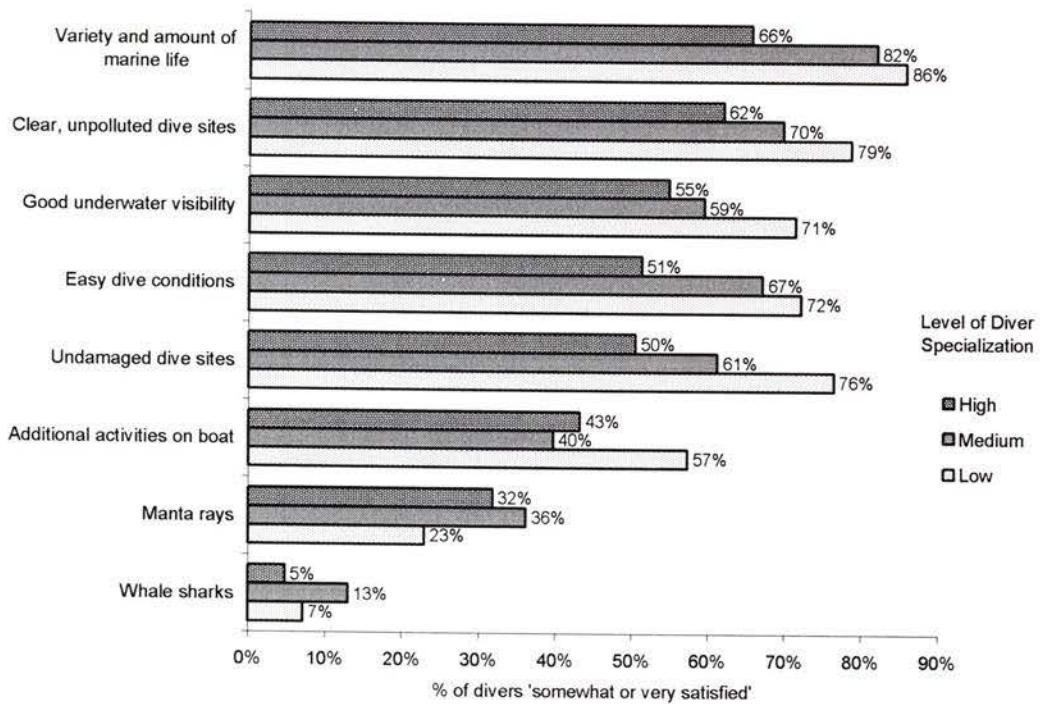


Figure 7.4. Satisfaction With Environment And Service Features A Comparison Of Low, Medium And Highly Specialized Divers.



The results indicate that divers of the various specialization levels base their evaluation of the dive experience on different criteria. The divers' satisfaction with various reasons for participating in scuba diving, such as the marine flora and fauna, wilderness/nature experience, opportunity to experience adventure, to explore new environments, expand knowledge, challenge and develop dive skills, escape the demands of everyday life and exercise, decreased as the level of specialization increased. Only the level of satisfaction with the opportunity for underwater photography increased with specialization, which is not surprising, as comparatively few unspecialized divers indicated an interest in this activity.

The divers' satisfaction also varied among specialization groups for the environment and setting features. Satisfaction with underwater visibility, variety and amount of marine life, clear unpolluted dive sites, undamaged dive sites and easy dive conditions decreased as specialization increased. More experienced divers found these features to be significantly less satisfying than did divers with limited dive experience. Again, low and highly specialized divers have different expectations of these features, and thus, base their evaluations on different criteria.

7.3. Ecotourist Specialization

An important goal of this research is to integrate the recreation specialization concept with ecotourism, and apply the resulting model to the study of scuba diving tourism. The purpose of this section is to develop an ecotourism index that will be used to classify divers into subgroups based on their environmental attitudes and motivations. This framework will be used to determine whether the level of 'ecotourist specialization' has any impact on the satisfactions of the divers with their Phuket dive experience. An examination of the divers in Phuket using this specialization index will identify the range of ecotourism opportunities desired, and will illustrate the needs and expectations of the various ecotourist groups.

7.3.1. Ecotourist Specialization: Framework Design

Diver specialization was defined earlier (section 7.2.1.) using experience and involvement criteria. However, ecotourist specialization was defined by the attitudes of the divers and the importance of various characteristics deemed important in the ecotourism literature (Wight 1996; Palacio & McCool 1997). Based on the principles that ecotourists are interested in learning experiences, are concerned with protecting the environment, are motivated to see wildlife in natural environments and desire experiences in new locations, nine ecotourist 'motivations' were selected from the pre-dive survey for inclusion in the index. These were classified into three categories:

1. Learning experiences, which considered the importance divers placed on
 - the opportunity to expand knowledge
 - the opportunity to learn more about the local marine flora and fauna
 - the opportunity to learn more about the local people and culture
 - the opportunity to learn about marine environments

2. Environment protection, which considered the importance of
 - the commitment to the environment by the dive shop and crew
 - the diver's interest in participating in a reef monitoring project designed to maintain environmental quality at the dive sites and minimize the negative impacts of diving

3. New experiences in natural settings, which examined the diver's
 - interest in marine flora and fauna
 - desire for a wilderness / nature experience
 - desire to explore new environments.

With the exception of the reef monitoring project question, divers were asked to indicate the importance of each of these features to them on a five-point Likert-type scale, where 1= not at all important, and 5=extremely important. A rating of three was considered to be neutral, neither important nor unimportant. For these eight questions, a binary rating scale was used (table 7.7). Divers who indicated the feature was less important by responding with a one, two or three on the scale were assigned a zero for that feature, while those who indicated the feature was important by responding with a four or five rating were assigned a one. For the remaining question, divers were asked to indicate their interest in participating in a reef-monitoring project using a yes or no scale. Divers who responded 'yes' to this question were assigned a one, while divers who responded 'no' were assigned a zero. The total possible score for this index was nine. The individual scores were totaled (table 7.8), and based on these scores, divers were assigned to either the low, medium or highly specialized ecotourist group (table 7.9).

Table 7.7. Classification Of Ecotourist Specialization Indicators

Ecotourist Motivations	0	1
Opportunity to expand knowledge	less important	more important
Opportunity to learn about local marine flora and fauna	less important	more important
Opportunity to learn about local people and culture	less important	more important
Opportunity to learn about marine environments	less important	more important
Commitment to the environment by the dive shop and crew	less important	more important
Interest in participating in a reef monitoring project	no	yes
Marine flora and fauna	less important	more important
Wilderness / nature experience	less important	more important
Opportunity to explore new environments	less important	more important

Table 7.8. Distribution of Scores for the Ecotourist Specialization Framework

Ecotourist Rating	Percent of Divers
0	7.8
1	18
2	16.3
3	14.3
4	11.9
5	10.4
6	8.1
7	6.3
8	5.2
9	1.9
	100%

Table 7.9. Distribution of Ecotourist Specialization Groups

Ecotourist Specialization Rating	Percent of Divers	Number of Divers
Low (0-2)	42.0	227
Medium (3-5)	36.6	197
High (6-9)	21.5	116
	100%	506

Thus, 21.5 percent of divers are considered highly specialized ecotourists. This proportion is similar to other ecotourist specialization findings. For example, Palacio & McCool (1997) found that ecotourists comprised only eighteen percent of visitors at a tourist destination, although they participated in the same activities and attractions as all other tourists. Thirty-seven percent of the divers surveyed were classified 'medium' ecotourist specialists, while forty-two percent were identified as 'low' specialists. Bryan (2000) suggests that large numbers of recreationists generally define the mid-to-lower end of the specialization curve. These individuals may have low to medium knowledge and sensitivity about resource management issues. Accordingly, divers classified here as 'low ecotourist specialists' are likely ecotourists in name only, simply because they are participating in diving, which may be considered a marine ecotourism activity. Aside from participation in an outdoor activity in a 'natural' environment, data analysis indicated that individuals in this group did not meet the criteria required to be classified as an ecotourist. Keeping this in mind, however, for the purpose of clarity, divers will be referred to as low, medium and highly specialized ecotourists for the remainder of this thesis.

7.3.2. Results

The ecotourist specialization framework was applied to the importance and satisfaction results presented in chapters five and six, to highlight differences between specialist groups. The framework was also considered in the context of trip type. Overall, the results indicate the divers are not a homogeneous group sharing the same environmental attitudes, expectations or behavior. The relationships between level of ecotourist specialization and the other variables will be discussed in this section.

7.3.2.1. Ecotourist Specialization and Trip Type

The differences in the motivations and satisfactions of divers taking day and liveboard trips were previously discussed in the context of management requirements for the dive sites. To determine the influence that the level of ecotourist specialization might have in the understanding of these differences, the relationship between trip type and ecotourist specialization was examined. No significant differences exist in the composition of day and liveboard trips with regard to ecotourist specialization (table 7.10).

Table 7.10. The Distribution Of Ecotourist Specialists:
A Comparison Of Day And Liveboard Dive Trips

Level of Ecotourist Specialization	Day Trip		Liveboard	
	%	(n)	%	(n)
Low	40.9	83	42.7	144
Medium	36.9	75	36.2	122
High	22.2	45	21.9	71
Total	100%	203	100%	337

$\chi^2=.193$ $df=2$ $sig=.980$

When considered in the context of the ecotourist literature, these results are somewhat surprising. The literature (e.g. Burton 1998; Shackley 1996) suggests that dedicated ecotourists are likely to be more demanding in terms of the environmental quality and lack of human impact they desire and expect from their experience. Given the conditions at the dive sites, one might expect the more specialized ecotourists to select a liveboard trip in order to meet their expectations and satisfy their needs. However, it is important to remember that just because an individual is a specialized ecotourist does not mean they are a specialized diver. While previous results (table 7.4) showed that specialized divers were more likely to take liveboard trips, there is no evidence to suggest that high dive specialization and high ecotourist specialization are mutually exclusive. In fact, there is a large degree of difference between these two frameworks,

as is shown in table 7.11. For example, only thirty-five percent of highly specialized ecotourists are highly specialized divers, while thirty-one percent are medium and thirty-four percent are low specialists. Conversely, twenty-four percent of high dive specialists are specialized ecotourists, forty-one percent are medium and thirty-five percent are low. Diving is a sport that requires some degree of training and skill. So, while highly specialized ecotourists could be expected to select liveaboard trips over day trips, the influence of the level of diver specialization cannot be ignored.

Table 7.11. Cross-Tabulation Chart Showing The Distribution Of Divers Across The Diver & Ecotourist Specialization Frameworks.

Level of Ecotourist Specialization	Level of Diver Specialization			Row Totals
	Low	Medium	High	
Low	40.2	46.8	34.7	
	34.7	38.4	26.8	100%
Medium	39.0	33.3	41.5	
	36.2	29.4	34.5	100%
High	20.7	19.9	23.8	
	34.0	31.0	35.0	100%
Column Totals	100%	100%	100%	

7.3.2.2. Ecotourist Specialization and Importance

Because ecotourist specialization was defined by the divers' attitudes and the features they value in a dive experience, it is not surprising that a relationship exists between the degree of ecotourist specialization and the importance placed on various features. Chi squared tests were performed to identify such relationships (table 7.12).

Analysis of the results indicates that low, medium and highly specialized ecotourists have different expectations for their dive trip, and place different levels of importance on specific features. In many cases, a shift in preferences is evident along the ecotourist specialization continuum, as will be discussed below. The features that were used in the creation of the specialization index (marked with *) will be excluded from the discussion.

Reasons for Participating in Diving

As the level of ecotourist specialization increases, so does the importance of the diver's learning experiences, such as interest in underwater photography, interest in a special underwater feature, the opportunity to develop and challenge dive skills. The image of the sport also

becomes more important as the degree of ecotourist specialization increases, which is an interesting finding. Perhaps divers interpreted the word 'image' in the survey question (Q6j) to mean the underwater features they would experience or learn about while diving.

Table 7.12. The Importance Of Various Dive Trip Features:
A Comparison Of Low, Medium And Highly Specialized Ecotourists.

Reasons for Diving in Phuket	% of Each Ecotourist Group Responding 'More Important'			chi ²	df	sig
	Low	Medium	High			
High quality service from dive industry	50.9	55.4	65.8	6.784	2	.034
Inexpensive place for dive holiday	30.2	40.5	47.0	10.206	2	.006
Opportunity to dive in unique environment	59.3	72.4	79.1	16.270	2	.000
Opportunity to learn about marine flora and fauna	58.1	79.2	98.3	68.640	2	.000 *
Opportunity to learn about local people/culture	31.7	50.8	78.4	67.628	2	.000 *
<u>Reasons for Participating in Diving</u>						
Marine flora and fauna	71.8	87.3	98.3	42.221	2	.000 *
Wilderness/nature experience	68.7	80.7	92.2	26.059	2	.000 *
Interest in underwater photography	21.6	31.8	37.7	10.953	2	.004
Interest in special underwater feature	22.4	23.8	53.1	38.614	2	.000
Explore new environments	52.0	69.5	88.8	48.019	2	.000 *
Expand my knowledge	54.2	69.0	93.1	53.568	2	.000 *
Develop my diving skills	52.0	60.4	69.8	10.393	2	.006
Challenge my diving skills	23.0	28.4	43.5	15.528	2	.000
Image of the sport	13.7	20.8	29.8	12.486	2	.002
<u>Environmental Features</u>						
Variety and Amount of Marine Life	94.7	98.5	99.1	7.428	2	.024
No Crowding by Other Divers	77.9	87.3	89.7	10.589	2	.005
Unique Formations	61.3	59.2	76.5	10.461	2	.005
Other Sharks	55.1	71.6	73.0	16.844	2	.000
Manta Rays	70.0	80.2	79.1	6.854	2	.032
Turtles	58.6	67.3	78.1	13.098	2	.001
Good Photo Opportunities	27.4	38.5	48.7	15.595	1	.000
Opportunity to learn about marine environments	49.8	72.6	94.8	74.621	2	.000 *
<u>Service Features</u>						
Information given by dive master	86.7	92.9	93.1	5.877	2	.050
Commitment to environment by dive	80.6	90.9	95.7	19.101	2	.000 *

*Denotes features used in the definition of the ecotourist specialization index.

Reasons for Diving in Phuket

The opportunity to dive in a unique environment became more important to divers as ecotourist specialization increased, which supports other literature on specialization (e.g. Duffus & Dearden 1990). That the importance of high quality service provided by the dive industry and

an inexpensive dive holiday increased with specialization is somewhat counter intuitive. The literature suggests that ecotourists are willing to pay more for their ecotourist experiences than non-ecotourists², and place less importance on the provision of elaborate accommodation and cuisine. Again, it is reasonable that divers interpreted 'high quality service' to represent the education/environmental services provided on the trip. As briefly discussed in chapter two, for the past few decades Phuket has been a 'destination with a reputation'. Although Phuket's reputation has been changing in recent years, is likely not a holiday locale commonly associated with ecotourism just yet. Thus, divers interested in an ecotourism experience might be attracted to the region upon learning about the high quality of service provided by the industry.

Environment and Service Features

The importance of the variety and amount of marine life, lack of crowding by other divers, presence of unique formations, sharks, turtles and good photo opportunities all increase as ecotourist specialization increases. In terms of service, the information provided by the dive master is more important to highly specialized ecotourists. These environment features and the opportunity to learn are characteristics commonly associated with the motivations of ecotourists (e.g. Crossley & Lee 1994; Wight 1996 ; Palacio & McCool 1997 etc.)

These results highlight differences between ecotourist specialization groups, and clearly demonstrate the changes that occur along the specialization continuum. As specialization increases, so does the importance of 'learning experiences'. It is evident that highly specialized ecotourists, regardless of where they may fall on the dive specialization scale, use diving as a medium for learning. The opportunity to learn about the natural environment while spending time in this environment becomes significantly more important as specialization increases, as do other related opportunities, such as developing dive skills. These results concur with literature cited on the nature of the ecotourist and the ecotourist experience.

7.3.2.3. Ecotourist Specialization and Satisfaction

To determine whether differences in overall satisfaction exist between ecotourist specialization groups, Analysis of Variance tests were completed (table 7.13). In contrast to the dive specialization index, ecotourist specialization is positively related to the level of overall

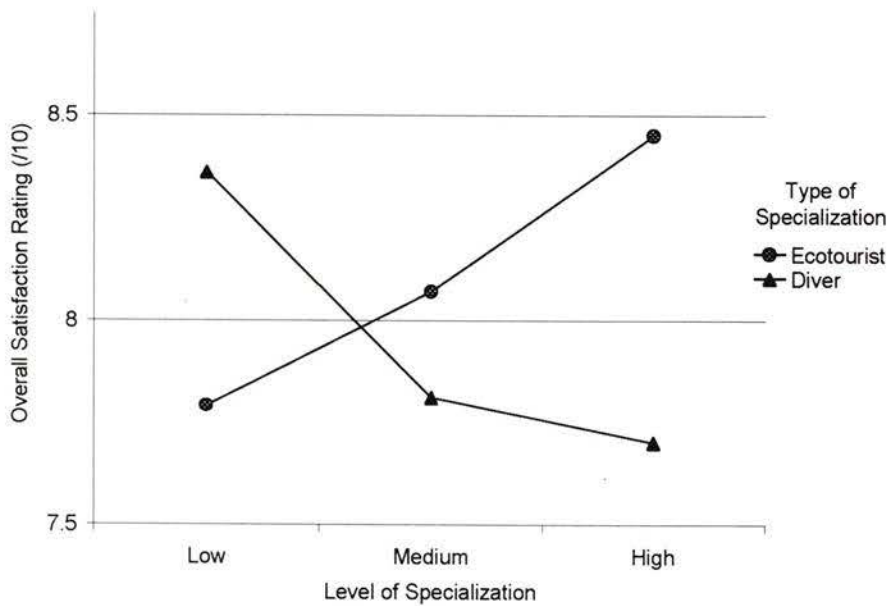
²It is also worth noting that many divers indicated that Phuket is indeed not an inexpensive location for a dive holiday. It may be, however, less expensive than other ecotourist destinations throughout the world.

satisfaction in that as the level of ecotourist specialization increases, so does the level of satisfaction with the dive trip, as measured on the ten-point scale (figure 7.5). Highly specialized ecotourists rated their trip an 8.45, while unspecialized (low) ecotourists gave a rating of 7.79. This finding is somewhat surprising, given that both the literature and the previous section indicate that highly specialized ecotourists often have higher expectations for environmental quality than do other visitors. This finding will be discussed in detail in the upcoming summary and discussion section.

Table 7.13. Satisfaction With The Phuket Dive Experience:
A Comparison Of Low, Medium And Highly Specialized Ecotourists

Satisfaction Measure	Ecotourist Specialization Group (mean)			Significant Difference?					
	Low (L)	Medium (M)	High (H)	d.f.	f.	sig.	L-M	M-H	L-H
Overall satisfaction	7.79	8.07	8.45	414	6.02	.003			*
Experience vs. expectations	3.35	3.52	3.45	434	1.608	.202			
Experience vs. other dive experiences	3.36	3.48	3.30	422	1.306	.272			

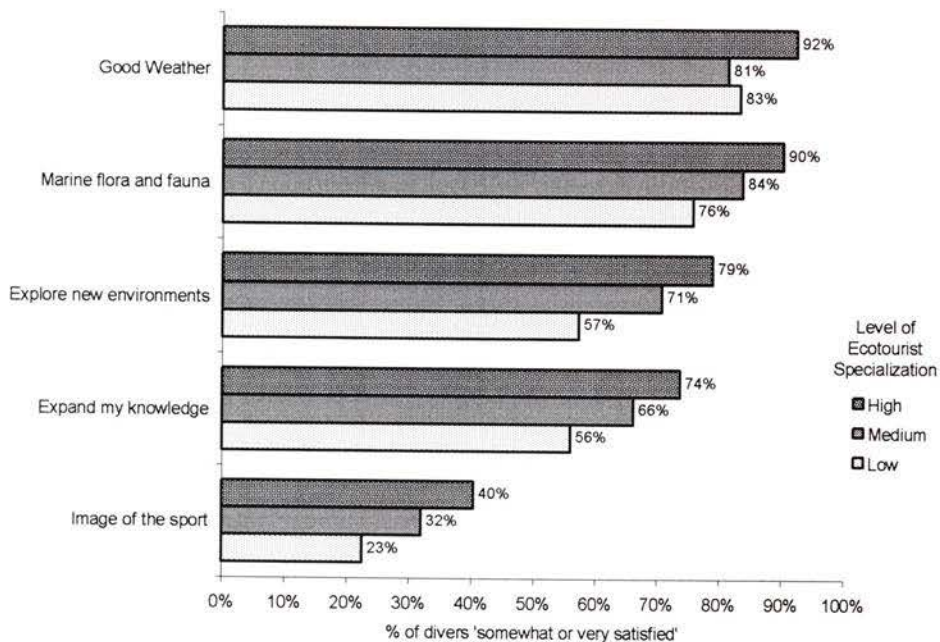
Figure 7.5. Overall Diver Satisfaction: A Comparison Of Diver And Ecotourist Specialization Groups.



Chi squared tests indicate that a relationship between the degree of ecotourist specialization and satisfaction with several dive trip features does exist. Significant results are

displayed in figure 7.6, where the categories 'somewhat satisfied' and 'very satisfied' ('4' and '5' on the satisfaction rating scale) are grouped together for ease of illustration and interpretation. As the level of ecotourist specialization increases, so does the level of satisfaction with the marine flora and fauna encountered. This finding is opposite to that found for diver specialization. Highly specialized divers were least satisfied overall with the marine flora and fauna they encountered on their dive trip. Satisfaction with the presence of good weather, and learning opportunities such as the chance to explore new environments, expand knowledge, and the information provided by the dive master all increased with ecotourist specialization. Not surprisingly, these features were all more important to highly specialized ecotourists than to less specialized ecotourists, and it appears that the Phuket experience met these divers expectations.

Figure 7.6. Satisfaction: A Comparison Of Low, Medium And Highly Specialized Ecotourists



7.4. Satisfaction Models and Specialization

Earlier in this thesis (section 6.3), satisfaction models were used to assess whether the features marketed by the Phuket dive industry actually contribute to diver satisfaction. This analysis evaluated the dive trip features most influential at providing satisfying visitor experiences. Identifying these dimensions is important, however, it does not take into consideration whether personal differences influence the way in which divers evaluate the quality of the experience, and in turn, how such differences contribute to the degree of overall

satisfaction. Analyses presented earlier in this chapter showed that divers are not a uniform population in terms of their expectations, motivations, preferences, environmental attitudes and personal characteristics, and grouped the divers into more homogeneous sub groups using the diver and ecotourist specialization frameworks. Using the theory that divers will be satisfied when their expectations and motivations are fulfilled, the purpose of this section is to investigate whether the relationship between overall satisfaction and satisfaction with various features is related to the differences between specialization groups.

To determine if the dive trip features most strongly related to overall satisfaction varied with the diver or ecotourist specialization level, correlations between individual features and overall satisfaction were tabulated for each specialization group. The features were ranked from high to low based on the strength of their relationship with overall satisfaction (table 7.14). The congruency between the top ten features overall and the top five for each specialization group is shown in table 7.15.

Table 7.14. The Top Five Correlations With Overall Satisfaction For Each Diver Specialization And Ecotourist Specialization Group.

Low Diver Specialization		Low Ecotourist Specialization	
1. Marine flora and fauna	r=.643	1. Variety and amount of marine life	r=.611
2. Variety and amount of marine life	r=.574	2. Wilderness/nature experience	r=.595
3. Good underwater visibility	r=.536	3. Marine flora and fauna	r=.579
4. Opportunity to expand my knowledge	r=.532	4. Good underwater visibility	r=.496
5. Clear unpolluted dive sites	r=.515	5. Opportunity to expand my knowledge	r=.484
Medium Diver Specialization		Medium Ecotourist Specialization	
1. Variety and amount of marine life	r=.596	1. Variety and amount of marine life	r=.628
2. Clear unpolluted dive sites	r=.531	2. Marine flora and fauna	r=.595
3. Wilderness/nature experience	r=.510	3. Wilderness/nature experience	r=.559
4. Undamaged dive sites	r=.483	4. Good underwater visibility	r=.572
5. Opportunity to expand my knowledge	r=.424	5. Clear unpolluted dive sites	r=.510
High Diver Specialization		High Ecotourist Specialization	
1. Variety and amount of marine life	r=.721	1. Variety and amount of marine life	r=.545
2. Marine flora and fauna	r=.679	2. Clear unpolluted dive sites	r=.527
3. Wilderness/nature experience	r=.657	3. No crowding by other divers	r=.413
4. Undamaged dive sites	r=.540	4. Marine flora and fauna	r=.412
5. Clear unpolluted dive sites	r=.535	5. Undamaged dive sites	r=.409

Table 7.15. Similarities Between The Overall Rating Of Dive Trip Features And The Rating For Specific Specialization Groups.

Overall Rating	Dive Trip Features Most Strongly Correlated with Overall Satisfaction	Rating for Diver Specialization Levels			Rating for Ecotourist Specialization Levels		
		Low	Medium	High	Low	Medium	High*
1	Variety and amount of marine life	2	1	1	1	1	1
2	Marine flora and fauna	1		2	3	2	4
3	Wilderness/nature experience		3	3	2	3	
4	Clear unpolluted dive sites	5	2	5		5	2
5	Undamaged dive sites		4	4			5
6	Opportunity to expand knowledge	4	5		5		
7	Good underwater visibility	3			4	4	
8	Opportunity to explore new environments						
9	Opportunity to learn about marine environment						
10	Unique formations						

* The number 3 rating for highly specialized ecotourists is the lack of crowding by other divers. This feature was rated 24th overall.

The variation between the diver specialization groups and the ecotourist specialization groups is slight, and generally does not deviate from the top ten features overall. The one exception to this occurs in the highly specialized ecotourist group, where 'no crowding by other divers' had the third strongest correlation with overall satisfaction. The magnitude of this result is very illuminating because overall, this feature was ranked twenty-fourth. Clearly, the relationship between a lack of crowding at the dive sites and overall satisfaction is much stronger for highly specialized ecotourists than for those who are less specialized. This is an important consideration, particularly for dive operators who cater to ecotourists.

Another observation is that the strength of the correlation between the individual features and overall satisfaction differs by specialization group (see table 7.14). The closer the correlation number is to 1.000, the stronger the relationship between satisfaction with the individual variable and overall satisfaction. Of the diver specialization groups, the strongest correlations were those of the highly specialized divers. While strong positive correlations are evident for all diver and ecotourist specialization groups, the magnitude is not consistently as high for any other group. This supports the literature that suggests highly specialized recreationists are inherently more dependent on the natural environment in terms of both the value they place on various characteristics, and the influence that the social and physical conditions can have on their satisfaction (e.g. Wellman *et al.*, 1982; Viriden & Schreyer 1988; Ditton *et al.*, 1992).

The ecotourist specialization groups do not follow this pattern. The strongest correlations with overall satisfaction are found in the low specialist group, while the weakest relationships are evident for the most highly specialized ecotourists. At first glance, it may appear that this specialization framework is an 'exception to the rule' presented in the literature and discussed above. However, this finding is consistent with the ecotourism literature, and with previous findings discussed in chapters five and six. Highly specialized ecotourists have different motivations, preferences, and expectations for their trips than do other travelers, and thus, place different levels of importance on various features. The results indicate that they also have a different way of evaluating their overall experience. While certain environment features are significantly more important to specialized ecotourists, the results suggest that their satisfaction is not as closely linked to the provision of a pristine environment as it is for less specialized ecotourists. Rather, it appears that in the absence of the desired environmental conditions, other aspects of the trip compensate to provide a satisfying experience overall for the specialized ecotourists. Thus, it is conceivable that the opportunity to experience, interact with, and learn about the marine environment contributes to the high satisfaction of the specialized ecotourists when the marine environment is less pristine than desired. Because of this, it is intuitive that the strength of the relationship between overall satisfaction and the various features would be somewhat different for highly specialized ecotourists than for other specialization groups and other specialization frameworks. (However, it is also possible that these findings could result from the way in which the ecotourist specialization framework was designed. This will be considered in the upcoming summary and discussion section).

Previous results have indicated that of all specialization groups, the highly specialized divers are perhaps the least satisfied overall with the Phuket dive experience. However, the results presented in this section suggest that while members of this group may generally be more challenging to satisfy, their satisfaction is closely related to the presence of specific environmental conditions.

Again, the issue of whether satisfaction can be explained in terms of separate aspects of the diving experience comes to light. For the overall results, the combined sum of all dive trip features yields a stronger correlation with overall satisfaction than any individual feature. This is also the case for each of the diver and ecotourist specialization groups. Essentially, it appears that in the provision of a satisfying diving experience, the whole is greater than the sum of the parts. Thus, this section concurs with the findings of previous analyses, such as chapter seven. It is critical that resource and industry managers consider all dive trip features in their management objectives and decisions. While certain features have been identified as playing a more

significant role in overall satisfaction, and are thus important to the sustainability of the dive industry, such features should not be maintained at the expense of other aspects of the dive experience.

7.5. Summary and Discussion

Clearly, the aspects of the dive trip valued by divers vary considerably between diver specialization groups, and low, medium and highly specialized divers appear to have different expectations for their dive trips. The features found to be more important to less specialized divers illustrate their inexperience and reflect the learning curve that occurs when undertaking a new activity. To these divers, the opportunity to develop and challenge dive skills in easy dive conditions, under the guidance of a good, informative dive master, was significantly more important than to more specialized, experienced divers. To more specialized divers, the marine flora and fauna at the dive sites, particularly whale sharks and manta rays, took on greater importance, as did the opportunity to experience such features in the absence of crowding by other divers. The opportunity to partake in underwater photography also increased as specialization increased. Presumably, as divers become more comfortable and confident in the underwater environment, they are likely to expand their interests to include new, more specialized activities related to diving. These findings concur with both the recreation specialization literature and the scuba diving literature, and support the theory that divers will become more specialized over time.

In terms of both the overall satisfaction with the dive trip, and satisfaction with (most) specific trip features, the relationship between diver satisfaction and the level of diver specialization is inverse. The Phuket diving experience is most satisfying to less specialized divers. As specialization increases, the level of satisfaction decreases, and the highly specialized divers, who initially have higher expectations for their dive experience, are least satisfied overall.

As illustrated in section 7.2.1.2, the importance placed on various dive trip features differs between diver specialization groups. Because highly specialized divers generally have more diving experience, often in a variety of environments, they have a better idea of what they value in a dive experience, and consequently, have more specific expectations for their Phuket dive trips. Less specialized divers, however, have comparatively little experience, and thus, have more general expectations for their trips. In fact, many new divers indicated on the pre-dive survey that they had few expectations, simply because it was their first dive experience:

“Being my first experience I have no expectations aside from a new experience in a new world”.

“It is my first time diving and I do not know what to expect. I do know it will be different than anything I have ever experienced before in my life, and I hope that if I can get over my fear of breathing underwater, I will love it!”

“This will be my first time diving. I don’t really know what to expect but I hope to see some fish and maybe some coral too”.

“I do not have really specific expectations for my diving. I just hope that everything goes well and I have lots of fun”.

Thus, it is clear that such divers would likely be more satisfied with any dive experience than would individuals who began their trips with very specific expectations. Because of the inherent differences between specialization groups, the basis on which individuals evaluate their dive experience is significantly different between groups. Field observations taken during the dive trips highlighted these differences. It appeared to the researcher that for the unspecialized divers, the marine flora and fauna that was actually encountered during the dives was the basis for satisfaction. In contrast, the specialized divers seemed to focus not on what was encountered, but on what was missing. Peterson (1974) identified environmental conditions that were major determinants of satisfaction, and also identified the aspects of the environment that were too common or not common enough to have any significant impact on satisfaction. Where experienced divers may take certain portions of the dive experience for granted because they are so common or typical, it appears that the newer divers do not do the same. Field observations on the dive trips showed that less experienced divers frequently were very enthusiastic, excited and enthralled following their dives. It appeared that the newer divers truly took very little for granted during their initial dives. Many of the comments of the post-dive survey reflect that everything was new to them, and was therefore exciting!

“It was my first time diving. I was amazed with the overall quality of fish, water and coral”.

“What a fantastic first dive experience! The dive sites were beautiful and unspoiled. The fish were very friendly!”

“I had such a fantastic time. Everything was wonderful. I couldn’t have asked for a better first dive experience! Thank you!”

“As this was my first experience, I have nothing to compare it to but I am very pleased and impressed with everything.”

This contributes to the explanation of why new divers experience greater satisfaction in mediocre dive environments than do experienced divers. What is considered to be a 'below average' dive to a highly specialized diver may well be extremely satisfying to someone who has little or no basis for comparison. It is therefore reasonable that less specialized divers would ultimately indicate a higher degree of satisfaction with their Phuket dive experience, (or, in fact, any dive experience) than would specialized individuals. In short, as the level of diver specialization increases, it becomes significantly more challenging for resource and industry managers to provide a satisfying dive experience.

These findings concur with the recreation specialization previously discussed, and relate to literature in a variety of subject areas. The concept of purism, an attitudinal orientation towards an ideal, has been used to examine differences in the perceptions and desires of recreationists (Stankey 1972). Similar in many ways to recreation specialization, purism can be used to explain the relationships between the personal characteristics of individuals and their attitudes and perceptions of recreation settings, both environmental and social. Highly specialized recreationists are often considered 'purists' (Shafer & Hammitt 1995). These individuals generally have the most explicit ideals for their chosen activity, and thus have the most specific expectations for the biophysical and social settings. As a result, they are the most likely of recreationists to be affected by the conditions present in the recreation setting, which may ultimately impact on their satisfaction level.

The importance and satisfaction data presented earlier in this section suggest that the most highly specialized divers can indeed be considered 'purists'. This adds to the explanation of why these divers experience lower degrees of satisfaction than do less specialized individuals. They often have very specific ideals, and seemingly, the most demanding expectations. These divers require higher resource quality and a greater degree of 'wilderness' (i.e. fewer divers) to be satisfied. It is suggested that recreationists with high purist attitudes can help to define baseline and acceptable conditions in the social and biophysical environments of recreation activities through their perceptions and preferences (Shafer & Hammitt 1995). Although it is still rated reasonably high overall, that the Phuket dive experience is less satisfying to the 'purists' should be an issue to those concerned with the sustainability of the dive industry. This indicates

that action to improve both the management of the physical environment, and the social setting of the dive experience is needed.

Also closely related to these findings is the concept of the 'Tourism Life Cycle', introduced by Butler in 1980, and modified by Duffus & Dearden in 1990. In general, there is a trend for tourism developments in many places to slowly become over-developed, over-commercialized, and damaged, which often leads to the loss of the qualities that originally attracted the tourists (Sharkey & Momsen 1995), and a resulting change in the tourist clientele. Butler's resort cycle model described the development of a tourism destination as a series of stages, each characterized by specific features, including visitor numbers and infrastructure.

"Visitors will come to an area in small numbers initially, restricted by lack of access, facilities and local knowledge. As facilities are provided and awareness grows, visitor numbers will increase. With marketing, information dissemination, and further facility provision, the area's popularity will grow rapidly. Eventually, however, the rate of increase in visitor numbers will decline as levels of carrying capacity are reached. These may be identified in terms of environmental factors ... or social factors (crowding). As the attractiveness of the area declines relative to other areas, because of overuse and the impacts of visitors, the actual number of visitors may also eventually decline.

Butler 1980:6.

The development of Phuket as a tourist destination notwithstanding, this cycle appears to directly relate to the development of dive tourism in the region.

Duffus and Dearden (1990) related the tourism life cycle idea to whale watching, a type of wilderness recreation, and factored the concept of recreation specialization into the equation. Their resulting theory clearly applies to this study of dive tourism. They propose that initially, the small number of visitors to an outdoor recreation site will be specialists, who require little in the way of infrastructure or facilities. These visitors are likely to be adventurous and highly motivated, and are likely attracted to the destination by the natural environment. Because the number of visitors at this point is low, the management intervention required is minimal. This essentially describes the establishment and growth of the Phuket dive industry during the late 1970's to the early 1990's, when there were less than fifteen dive companies on the Island.

Duffus and Dearden (1990) then propose that as awareness of the destination increases and the popularity of the activity grows, individuals with less experience will be drawn to the site. Large numbers of unspecialized visitors will travel to the area, and demand for services and facilities will grow, placing increasing pressure on the environmental and social systems. This effectively depicts the development of the Phuket dive industry from the mid-1990's to present.

The area was essentially 'discovered by the diving masses', and became very well known throughout the world. A popular dive magazine rated the Similan National Marine Park as one of the world's top ten dive sites, and both the number of divers and the number of dive operators in the region increased dramatically. By 1999, there were almost ninety dive companies operating on the Island.

Duffus and Dearden (1990) go on to suggest that as the number of less specialized individuals grows, a decrease in the satisfaction level of the highly specialized will occur. The presence of large numbers of people changes the nature of the recreation experience and may negatively influence the environmental conditions as well. Because specialists have more specific expectations for their experiences, and are more sensitive to stresses and conflict, the site will no longer fulfill their expectations. This group of recreationists will not be sufficiently satisfied with the experience, and may then be displaced, and go in search of new areas that are less developed. Again, it appears that the Phuket dive industry has followed this model of development. The highly specialized divers reported significantly lower satisfaction with the Phuket dive experience than other divers, and were more likely to indicate that they would not return to Phuket in the future for diving.

Thus, given the stage of development of this dive tourism destination, it appears that at some point, specialized individuals may no longer be attracted to Phuket for diving. The results suggest that Phuket may already be decreasing in attractiveness to specialized divers. While the actual number of divers in the area may not decline, changes will likely occur in the type of diver attracted to the area. In fact, several of the dive operators involved in this research project commented on the change in the dive clientele during the three years prior to the field season. The divers who visited Phuket during the 1980's and early 1990's were considered by operators to be 'hardcore divers', whose holidays were 'all about the diving, without all the frills'. The divers who have traveled to the area more recently are perceived by the dive operators to be more money conscious, and more concerned with the all the dive trip related 'frills' (e.g. the service features). Discovered just a relatively short time ago, the Phuket industry will have to compete with other dive destinations that are more recently discovered, and may risk becoming a destination where people come for dive training, and then go elsewhere for the 'good' diving.

These issues are frequently confronted in the dive literature, albeit indirectly. Perusal of any dive magazine clearly identifies many of the features sought after by divers. Scuba divers, especially those with experience, are forever striving to experience the 'ultimate' dive site, where the marine flora and fauna are 'untouched' by people, and in 'pristine' condition. Once word gets

out about these 'ultimate' dive sites and the 'masses' begin to arrive, many divers lose interest and move on to the next 'untouched' site.

The major problem with this pattern is the diminishing supply of new locations for diving throughout the world (Orams 1999). This relative lack of new, 'pristine' dive destinations, coupled with the ever-increasing number of divers in the world initiates a critical question. Where will the specialized divers go when all the 'good sites' are gone? Clearly, efforts to ensure the maintenance of the marine environment, particularly the dive sites that are presently in use, is required to ensure the provision of enjoyable dive experiences, and ultimately, a sustainable dive industry.

While relationships between the level of ecotourist specialization and diver motivations and satisfactions were highlighted, the findings were often opposite to those found for the diver specialization index.

The level of ecotourist specialization was clearly related to the degree of importance placed on numerous aspects of the dive trip. Features such as the opportunity to dive in a unique environment, the variety and amount of marine life, interest in a special underwater feature, a lack of crowding by other divers, and an informative dive master were among those more important to the highly specialized ecotourists. These findings are consistent with the characteristics reported in the literature that suggest ecotourists are interested in learning opportunities, are motivated to see wildlife in natural settings, and desire new experiences in natural settings. The importance of the image of the sport, the expense of the trip, and the high quality of service provided by the dive industry also increased with ecotourist specialization, which is somewhat contradictory to what is found in the literature. However, reasonable and likely explanations were proposed for each of these findings.

The level of satisfaction with specific dive trip features differed between ecotourist specialization groups. Highly specialized ecotourists were more satisfied with the marine flora and fauna, the opportunity to experience new environments and expand knowledge, and the information provided by their dive master than were less specialized ecotourists. These features were also of greater importance to the more specialized ecotourists. Ryan (1995) suggests that the increased satisfaction levels reported by the specialized ecotourists relate to the 'nature of the involvement', whereby the more committed a person is to a course of action, the higher the degree of success. The literature suggests that a positive environmental attitude and desire to both experience nature and learn about it is significantly and positively correlated to ecotourist participation (e.g. Luzar *et al.*, 1998). The general 'nature' of ecotourists therefore indicates that they are more interested and committed to having positive encounters that include exploring,

experiencing and learning than are other visitors, some of whom perhaps seek only to be entertained.

With regard to overall diver satisfaction, highly specialized ecotourists indicated a higher degree of overall satisfaction with their dive trip than did less experienced ecotourists. Given that many of the dive sites are commonly perceived to be in 'less than pristine' condition, these results contradict some of the published studies. For example, Shackley (1996) found that the more experienced a 'nature tourist' is, the more likely he or she is to be demanding in terms of environmental quality and a lack of human impacts in their experience. She suggests that the quality of the visitors' experience, and ultimately, their satisfactions, will depend on the extent to which their expectations are met or exceeded. Similarly, Burton (1998) found that casual nature tourists could be satisfied with an experience in which the evidence of human impact on the environment was significant, while the expectations of dedicated nature tourists would not be met in such a setting. Rather, the satisfaction of the specialized tourists would be dependent on the provision of a pristine wilderness with no evidence of impacts.

While the satisfaction results contradict these and other previously published reports, they do concur with the findings of a study conducted in Australia by Chirgwin & Hughes (1997). Recognizing that in the literature, 'ecotourism' generally relates to visitation to natural, relatively undisturbed areas, these researchers examined the 'ecotourism experience' from the perspective of the visitors themselves. They sought to determine how central the provision of a pristine, undisturbed environment was to the satisfaction of ecotourists at the artificially created Fogg Dam wetlands, located within Kakadu National Park. These authors found that a pristine area is not necessary to the ecotourist as long as the environment is aesthetically pleasing and provides opportunities for learning about, or simply viewing wildlife. They suggest that areas modified by humans can be acceptable as an ecotourist venue and satisfying to the visitors provided they give the ecotourists the opportunity to meet their learning needs and objectives, and experience nature. While the context is somewhat different, Chirgwin and Hughes' results lend credibility to the findings of this thesis. They both suggest that while natural, undisturbed environments are both important to, and highly valued by ecotourists, it is possible for other aspects of an experience to compensate for less pristine environments, and ultimately contribute to an ecotourism experience that is highly satisfying overall. (The diver comments provided at the end of chapter eight help to clarify the reasons behind this theory). Still, given that much of the ecotourism literature suggests otherwise, it is necessary to acknowledge that the findings of the current study may reflect the design of the ecotourist specialization framework more so than the actual perceptions and

satisfactions of the ecotourists. Thus, it is possible that the results may not be accurate. This area of study clearly requires more detailed investigation.

Overall, the findings support the idea that divers who are also highly specialized ecotourists have a different set of criteria by which they evaluate their dive trip. It appears that to highly specialized ecotourists, the most crucial goal of the experience may not necessarily be to have the most incredible dive at the most pristine site, as is often considered to be the goal of other highly specialized outdoor recreationists in their chosen area. Rather, these results indicate that to more specialized ecotourists, an important objective is to have an enjoyable and educational experience in the natural environment. Ultimately, in addition to having a 'nature based' experience in the marine environment, it appears that highly specialized ecotourists are also looking for a medium in which to learn and expand their knowledge. This supports the ecotourist literature, which acknowledges the importance of learning. It is also important to mention that because of the nature of an 'ecotourist', divers who are also specialized ecotourists may have a greater understanding of the marine environment, and consequently, may appreciate what they experience on a different level than other divers, even at less pristine sites. So, while the specialized ecotourists highly value the dive trip environment features, in terms of overall satisfaction, these divers might not necessarily be more demanding of environmental quality than other divers, as long as their dive trips provide them with the opportunity to experience other features they value (such as educational opportunities). Thus, while divers who are highly specialized ecotourists might be considered 'purist' in terms of their motivations and the importance they place on various environmental features, they may not necessarily be considered 'purists' when examined in the context of their satisfactions. In light of this, it also appears that highly specialized ecotourists in Phuket may be considered less 'purist' than the highly specialized divers (figure 7.5).

This discussion has so far dealt with the marine ecotourists, but has yet to include adequate reference to the topic of 'marine ecotourism'. Is diving marine ecotourism? While ecotourists are defined in terms of their value systems and expectations, ecotourism operations are characterized by their impacts, both positive and negative, on the host environment. Thus, ecotourism in theory, and an 'ecotourist experience', as discussed earlier, are two related yet distinct topics.

The Ecotourism Society (1995) defined marine ecotourism as 'responsible travel to natural marine areas, which conserves the environment and sustains the welfare of the local people'. They suggest that marine ecotourism has four main components:

1. Travel to natural areas;
2. Travel that contributes to the conservation of the natural environment;
3. Travel that supports the well being of local communities;
4. Travel that involves environmental education or interpretation for the participants.

Scuba diving generally occurs in natural marine areas, and the nature of the activity implies some degree of desire and support for marine conservation. Field observations demonstrated that divers generally enjoy the underwater environment, and most divers, regardless of the degree of their personal, conscious, 'conservation ethic', would like the diving environments to remain in good condition so that they may continue to enjoy them in the future. Diving provides individuals with excellent opportunities to closely experience and interact with the underwater environment, and in many cases, increase their knowledge in the process. While diving may well qualify as an ecotourist experience, true ecotourism must support conservation efforts and must ensure that the tourists contribute financially to the maintenance of the natural areas they visit (Sweeting 1995).

Central to the idea of ecotourism is the financial reinvestment by the tourism industry towards the maintenance of the environments and species involved in the experience. The divers do contribute substantially to the local Phuket economy (as discussed in chapter four) through their expenditures on food, accommodation, transportation, entertainment and diving, and the dive operators contribute considerably as well, through their staffing and operation expenses. While some operators are actively involved in marine conservation projects, such as installing mooring buoys, working cooperatively with conservation NGO's to educate local school children and community members, and supporting conservation research projects, it is not clear to what degree the industry contributes financially, or otherwise to the maintenance of the marine environment at the dive sites. This will be discussed in more detail in chapter ten.

In Phuket, dive operators are required to pay a fee for use of the Similan and Surin Marine National Parks for diving. However, operators do not pay for the use of the liveaboard dive sites not included within these parks, nor for any of the day trip dive sites. Thus, for many of the area's dive sites, there is little financial support for conservation efforts from the local dive operators. It must be understood that this is a generalization, as some local operators contribute significant amounts to the local reef conservation groups, both financially and in kind, through the donation of company resources including training, dive gear, transportation, staff hours, equipment for mooring buoys etc. However, of more than eighty-five companies in the region, only a fraction do so.

Furthermore, discussion with dive operators highlighted that in the several years prior to and including the 2000 field season, not all dive companies paid the national park fees for use of the Similan and Surin dive sites. Some operators simply chose not to pay the fees for various reasons:

- they felt they did not benefit from paying the fees because when they needed help or support from the park staff during emergencies, it was not available;
- there was fishing going on in the park and thus, their fees were not being put towards marine conservation. Instead of using the park fees to finance the patrolling of the protected areas, the fees were being used to pay workers to 'sweep the dirt around on the islands';
- they were worried about government corruption and felt that the money was going directly into somebody's pocket etc.

Other operators were willing to pay the fees, but often found it difficult to do so. For example, they had travel from the dive boat to the island to pay the fees. If the park staff member responsible for collecting the user fees was unavailable, the dive staff had to wait or go back to their boat and return to the island at another time. This was a major inconvenience for some operators as it disrupted the trip itinerary. Regularly throughout the field season, operators reported returning to the island on several occasions, and being unable to find anyone on the island who would accept their park fees when the designated person was not available. At this time, the relationship between dive staff and National Park staff was often strained. Since the 2000 field season, the Similan and Surin National Marine Parks have undergone shifts in management and staff. Recent reports suggest that the relationship between the new park staff and the dive community has improved somewhat.

Recent changes to the park fee system have occurred since the 2000 field season. The per-person fee of ten baht has increased to two hundred baht for foreigners, staff members included, and as of 2002, dive operators are required to purchase enough vouchers for the entire year during a three week period at the beginning of the dive season. Most dive operators are unhappy with the fee increase and the new arrangement, as they often have no way of determining how successful their year will be at this point in the season, and thus, how many vouchers are required. While it appears that the changes will ensure more consistent financial support for use of the marine national parks, some dive operators have discussed changing their itineraries to avoid the parks altogether, and thus, avoid paying the fees. The viability of such plans is questionable, as the parks themselves are an important attraction to many liveboard divers. However, as the Myanmar (Burmese) Government opens more of their waters to dive tourists, new options for dive trip itineraries will arise.

With regard to the day trip dive sites, they are essentially an open access resource used by many, and restricted to nobody, including small scale commercial fishers, sport fishers, aquarium trade fishers and other recreational users. Thus (aside from personal conservation ethic and some degree of peer pressure), there is little incentive for operators to use them respectfully and in moderation to ensure their conservation. Many operators are very respectful, and encourage their employees and customers to be as well, however, this is not true of all the dive companies operating in Phuket.

Discussion within the dive community regarding the designation of some degree of protected area status to the day trip dive sites and charging for their use has occurred in previous years. Marine parks and sanctuaries have been created throughout the world to assist in the conservation of important marine habitats. In Phuket, some of the local day trip sites (see figure 2.4) were designated the 'Shark Point Marine Sanctuary' by the Thai Fisheries Department in 1992. However, it is unclear exactly what this means. Few members of the dive community acknowledge being aware of the designation and neither information nor guidelines for the use and management of such sanctuaries are readily available. Aside from this one example, official action to protect or conserve the environments at the dive sites and/or charge for their use has not yet been undertaken.

Essentially, many of Phuket's most popular dive sites are made available at little cost to the operators and divers. No financial nor environmental price is paid by the consumers who benefit from the coral reef environments, and thus, they are often subject to overuse and degradation. If fees are not charged, divers and operators should be encouraged to donate to local marine conservation projects designed to maintain the diversity and conditions at the dive sites. Divers were asked in the post-dive survey to indicate whether they would consider donating money to local marine conservation groups. Forty four percent of divers indicated they would make an average donation of seventy-one US dollars (mode = ten US dollars)³. Comparatively, Hvenegaard and Dearden (1998) found that almost eighty-four percent of trekkers surveyed in the Doi Inthanon National Park, Northern Thailand were willing to donate an average of ten US dollars to improve the conservation within the park. It is significant to mention, however, that numerous divers were hesitant to donate because they were skeptical about where their money would go. They indicated that they would contribute if they were certain that their donation would be used for marine conservation purposes, and 'not end up in some one's pocket'. Based on

³ Note -this is the amount divers said they would 'be willing' to donate. Donations were not solicited at this time, and thus, there is no guarantee that divers would be as forthcoming with their money when the request for donations is actually made.

these results, it appears that divers would volunteer financial support for the protection of the marine environment at the dive sites if given the opportunity, providing they knew specifically how their donations would be used. Fieldwork in Phuket indicated that there is little discussion of marine conservation issues on the dive boats, and the researcher did not witness requests for donations for, or by the local reef conservation group. Clearly, to take advantage of the financial resources that the divers might provide, discussion, organization and cooperation between the dive operators, staff, and marine conservation groups is required.

In addition to financial support, also central to the idea of marine ecotourism is that the diver's awareness of conservation issues must be increased through their experience. A continuum of dive operators displaying different degrees of environmentally responsible behavior exists in Phuket. These operators ultimately pass on their environmental ethics (or lack of) to their customers through formal, on-boat instruction, dive briefings and interpretation sessions, and their every-day behavior, actions and attitudes on the boat. A few 'deep blue', environmentally conscious dive operators exist at one end of the continuum. These operators abide by as many of the ecotourism requirements as possible, and require their staff and customers to do the same. They provide in-depth dive briefings and interpretation sessions, have holding tanks installed on their boats, collect garbage and excess food for proper disposal on land rather than throwing it overboard, pay their park fees, collect and remove garbage left by other users at the dive sites, and ensure that their divers and staff follow proper dive etiquette at all times (and accept the consequences when they do not). At the other end of the spectrum are dive operators who pay little heed to any of the ecotourism principles, and provide minimal environmental education or instruction to their customers. On several occasions, the researcher documented dive staff setting bad examples for their clients through inappropriate behavior, such as standing on coral during diving lessons, collecting shells from the reef and line fishing while moored over the dive sites.

Most Phuket dive companies are located somewhere in the middle of the spectrum. Even the most environmentally conscious dive operators are sometimes constrained by a lack of qualified dive guides who are able to effectively impart educational information to the divers. Likewise, companies located at the low end of the continuum often employ staff members who are extremely conscientious and aware of marine conservation issues, and ultimately, pass their knowledge on to their divers and other staff members alike. Interviews with dive operators and staff indicated that Phuket is a destination that experiences high staff turnover rates. This makes many operators hesitant to invest financial resources in staff training on environmental issues.

Additionally, many of the dive staff members interviewed indicated they became dive instructors more for the lifestyle it afforded them, rather than because they were interested in the conservation of the marine environment. Thus, without experiencing external pressure or incentives to learn about marine conservation issues (e.g. required training programs as a condition of employment), it seems unlikely that many of the staff members interviewed would take the initiative to learn on their own.

Phuket is presently home to more than eighty dive operations, and the degree of environmental awareness and educative standards varies greatly among the different companies. While individual operators may well be fulfill the required 'ecotourism' criteria, due to the wide range of operators located in Phuket, it is difficult to consider the dive industry (as a whole) an 'ecotourism' attraction. The application of this term to the industry is constrained by a lack of dive staff who have the desire to learn about the marine environment and conservation issues, and a lack of dive operators who have the desire and resources to teach them, and enforce specific standards for behavior. Burton (1998) investigated ecotourism operators in Australia, and found that those running the more environmentally responsible companies lacked experience in the tourism sector, while operators trained in tourism appeared to lack the understanding and the motivation to undertake environmentally sensitive practices. Whether operators and staff who turn to diving as a lifestyle choice also lack such understanding and motivation as a whole is worthy of additional research

Chapter 8. ACTION GRIDS

The overall goal of this section is to identify the strengths and weaknesses of the Phuket dive experience and highlight areas that require attention from management. To determine whether the Phuket dive experience meets the expectations of the divers, the relationship between the importance placed on each dive trip feature and the corresponding satisfaction rating is examined using modified action grids. This section reviews the action grid literature and explains the methods utilized to develop the modified grid. The results are then presented, first in aggregate form, then broken down by trip type and level of diver and ecotourist specialization. A summary and discussion conclude the chapter.

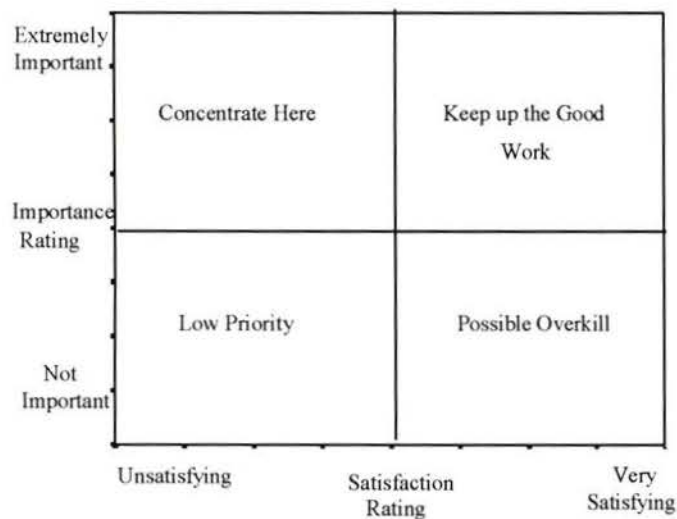
8.1. Literature Review

Consumer evaluations of performance are important to the success of tourism ventures (Duke & Persia 1996). Effectively interpreting consumer evaluations, however, requires that managers have an understanding of the consumers themselves, as the performance of tourism endeavors is most clearly understood when considered in the context of the attributes that visitors desire in a tourism experience. Introduced twenty-five years ago (Martilla & James 1977), action grid analysis (also known as importance-performance analysis)¹ has emerged in the tourism literature as a useful tool for managers interested in evaluating the success of their tourism ventures, and discovering their destination's shortcomings (e.g. Duke & Persia 1996; Vaske *et al.*, 1996; Hudson & Shephard 1998). Action grids provide managers with the means for understanding tourists' motivations and desires, and developing appropriate actions that satisfy their expectations (Huan *et al.*, 2002).

Action grids analyses are concerned with the importance individuals place on a series of attributes, and how well the experience 'performs' with respect to those attributes (Vaske *et al.*, 1996). For natural resource tourism, attributes can include environmental features, facilities, the types of programs or opportunities offered, the range of services provided, and the characteristics of the staff. This type of analysis is generally used in conjunction with visitor survey research. Visitors are asked to indicate the importance of various features to their enjoyment of the experience, often on a Likert-type scale. They are also asked to specify how well the features performed, or alternatively, how satisfied they are with each feature, also on a Likert-type scale. Action grids are created by plotting the mean importance rating for each feature against the

corresponding mean performance/satisfaction rating in order to display the data visually. The importance and performance means are computed for each attribute, and the data is plotted on a grid to highlight areas where management should concentrate (Vaske *et al.*, 1996). Although individual data can be plotted, group means for individual criteria are generally used for analysis (Duke & Persia 1996). Typically, the grid is divided into four quadrants, labeled ‘concentrate here’, ‘keep up the good work’, ‘low priority’, and ‘possible overkill’ (figure 8.1) (e.g. see Martilla & James 1977; Duke & Persia 1996). The location of the points in a particular quadrant illustrates the features that performed well and were sufficiently satisfying, and those that did not live up to the expectations of the customers, and thus require improvement. Ultimately, action grids can provide general direction to focus management attention and guide subsequent actions.

Figure 8.1. A Typical ‘Action Grid’ Used In Tourism Research



Adapted from Martilla & James (1977) and Duke & Persia (1996)

The location of the crosshairs that delineate the quadrants is critical to the practical application of this management tool (Hudson & Shephard 1998). The purpose of the crosshairs is to locate the features on the graph in such a way that facilitates the identification of the problem areas. Martilla & James (1977) and Huan *et al.*, (2002) stress that the placement of the crosshairs is a matter of judgement, and must carefully consider the management objectives for each particular study. The movement of these delineating points may provide additional information

¹ This approach is referred to here as ‘action grid analysis’ rather than ‘importance-performance analysis’ in order to focus on the action required, rather than on the importance or performance (satisfaction) of each feature. These were dealt with individually in chapters five and six.

for managers. For example, moving the crosshairs higher on the action grid can increase the standards of a tourism destination (Oh 2001).

8.2. Methods

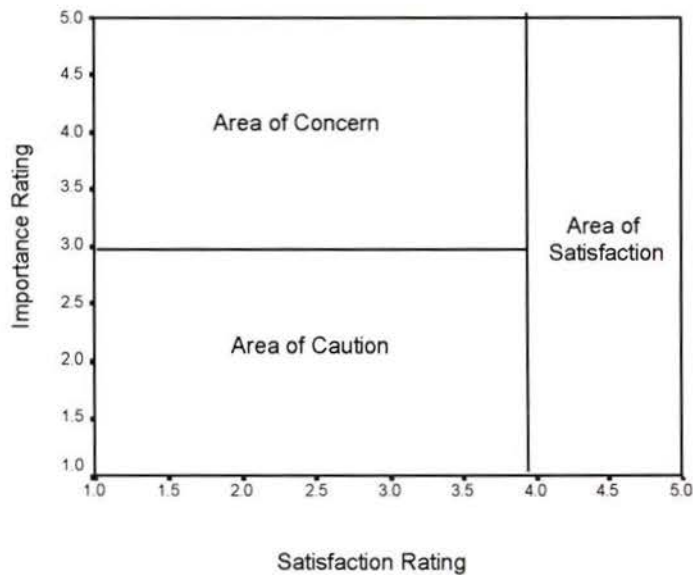
8.2.1 Development of the Modified Action Grid

For this study, the grids were created by plotting the pre-trip mean importance rating of each feature on the vertical axis against the corresponding post-trip mean satisfaction rating on the horizontal axis. Both mean scores were based on a five-point scale, where 1=not at all important and 5=extremely important on the importance scale, and where 1=very unsatisfied, 2=unsatisfied, 3=neutral, 4=somewhat satisfied and 5=satisfied on the satisfaction scale. The mean score, rather than other measures (such as the median or the seventy-fifth percentile) was used to create these action grids because it conveyed the greatest amount of detail, and provided value scores using two decimal places. The median and seventy-fifth percentile values, however, were given as whole numbers, and thus showed very little variability between dive trip features.

While the four quadrant method discussed above has been effective for evaluating the provision of services in the tourism industry and guiding management actions accordingly, some modification was required to enable the use of the grids as a resource management tool, particularly in fragile coral reef environments.

Because the ultimate goal of this study was to contribute to the sustainability of the Phuket dive industry by maintaining marine environmental quality such that it provides satisfying diver experiences on an on-going basis, the grid was modified, and divided into three sections, as shown in figure 8.2. The crosshair was placed at 'three' (neutral) on the importance scale. Although this research examines the importance of all aspects of the dive experience, the attributes that are of greater importance to divers are of particular interest. Thus, the mid-point of 'three' was selected to separate the 'more important' elements from the 'less important' features for this analysis. Placement of the crosshair on the satisfaction scale was set at 'four', which represents 'somewhat satisfied'. This was done to stress the importance of actually satisfying the diver's expectations, as a rating of 'three' on the satisfaction scale is merely neutral (neither satisfying nor dissatisfying to divers). Additionally, because the mean, or average, satisfaction score for each feature is used to create the grids, many divers will likely be less satisfied than are indicated on the grid. Thus, the mid-point rating of 'three', was deemed unacceptable. In this scenario, simply meeting the diver's expectations is not sufficient, and satisfaction with any features rated below 'four' by divers should be identified.

Figure 8.2. Modified 'Action Grid' Used For This Study



As illustrated in figure 8.2, the horizontal crosshair does not bisect the 'area of satisfaction', thus eliminating the region previously termed 'possible overkill'. This is to encourage resource and dive industry managers to avoid slipping into complacency, and treat favorable satisfaction ratings as a stimulus to maintain that aspect of the underwater environment, rather than ignoring it. Throughout the action grid literature (e.g. Duke & Persia 1996; Hudson & Shephard 1998), researchers suggest that management redirect resources from the 'possible overkill' section towards the attributes located in the 'concentrate here' section. While this may be appropriate for some types of tourism ventures, particularly those involved in the provision of visitor services, it is not appropriate for all operations. Customer satisfaction theories suggest that satisfaction is achieved when the experiences are better than the customers expected (Oliver 1997). Often, performance that exceeds the level of importance may be desirable, especially in a competitive industry based on the provision of natural resources. It was shown in chapters six and seven that the dive experience, in its entirety, contributes to overall satisfaction more-so than does any particular feature. Given what we know about divers and the diving experience, it is therefore important that management actions be directed at 'overall satisfaction', without disregarding attributes that are of low importance. Consequently, by eliminating the 'possible overkill' section common to typical action grids, the area of satisfaction has been enlarged for this model.

8.2.1.1. Area of Satisfaction

Features located in the 'area of satisfaction' received a somewhat or very satisfying (four or five) review overall from divers, regardless of the level of importance placed on these features. While features that fall into this area appear to meet the expectations of the divers, such elements cannot be excluded from management consideration. Although specific improvements may not necessarily be required, management objectives and actions must be directed to ensure that the quality of such features is maintained. This is particularly important when considering environmental features, given the importance of resource quality to scuba divers and to the overall sustainability of the dive industry. Thus, when dealing with fragile and dynamic environments, there can be no such thing as 'possible overkill'. Rather, perhaps the catchphrase for features that fall into this entire section should be 'keep up the good work'.

8.2.1.2. Area of Caution

While features that fall into the 'area of caution' received a mean satisfaction rating in the unsatisfying or neutral range (one to three), they were rated as 'less important' to divers on the pre-dive survey (one to three), and thus, direct attention from management may not be priority. Ideally, however, to provide a dive experience that is satisfying overall, all trip features should be satisfying to divers. While improvement of the features in the 'area of caution' section would contribute to the overall dive experience, such aspects of the dive trip need not be the immediate priority to resource and dive managers. Still, care must be taken to ensure that the quality of such features is maintained.

8.2.1.3. Area of Concern

To provide a dive experience that is satisfying overall, priority for improvement by resource and dive industry managers should be placed on the features that fall into the 'area of concern'. Such features were highly valued by divers as a part of the overall dive experience. They were rated as 'more important' (four or five) by divers on the pre-dive survey, yet fell in the 'unsatisfying or neutral' (one to three) range on the satisfaction scale. In short, the features located in this area may potentially be the shortcomings of the Phuket dive industry.

8.2.2. Development Of The Segmented Action Grid

Action grid analyses are a useful tool for managers interested in evaluating the success of their tourism ventures, and highlighting their destination's weaknesses. For situations involving homogeneous visitors, the simple action grid approach is a useful strategy in tourism research.

Problems with this approach may arise, however, when visitors differ in their personal characteristics, motivations for visiting, and expectations for the experience.

Vaske (*et al.*, 1996) suggest that different tourist types often place different levels of importance on various features. They propose that when segments of a population differ in their responses to importance or satisfaction questions, action grids created with this aggregate data may not adequately highlight the differences. Consequently, inferences based on such grids may be invalid for some groups of visitors, and may lead to the development of inaccurate, even detrimental conclusions. For example, when visitors differ in their motivations or expectations for a tourism experience, management directed at providing a more satisfying experience ‘overall’ may actually have a negative impact on many of the people it is designed to benefit. Huan (*et al.*, 2002) advocate segmenting visitors into more homogeneous sub-groups for action grid analyses so that the differences can be taken into account in management and planning objectives.

Previous analyses have highlighted differences in the importance and satisfaction data based on trip type in chapter five and six, and both diver and ecotourist specialization in chapter seven. Because ignoring these differences could possibly lead to the acceptance of results that are inaccurate and unrepresentative, it is necessary to examine the action grids in more detail. Selecting the level of detail at which to examine action grids presents challenges (Huan *et al.*, 2002), and researchers must make these decisions by balancing the statistical and actual benefits with the realistic limits of examination.

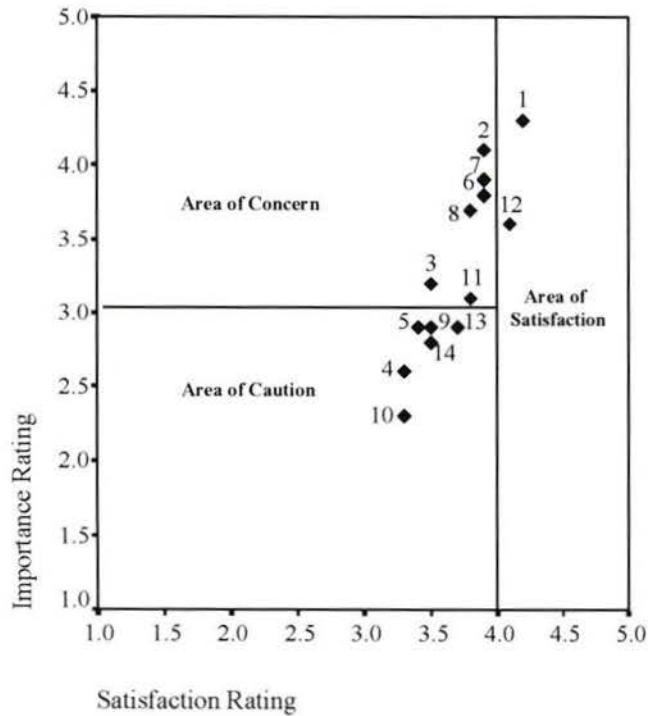
With this consideration in mind, following the aggregate grids, individual action grid results will be presented for day and liveboard trips, and for each of the diver and ecotourist specialization groups. The basis for selecting this level of detail will be presented in each section. A summary of the results and a discussion of the implications that they have for resource and dive industry managers will follow these analyses.

8.3. Aggregate Results

Because previous analyses (chapters five and six) have illustrated that various aspects of the dive experience are key to the sustainability of the Phuket dive industry, modified action grids were used to evaluate the ability of the dive trip to satisfy the diver’s motivations for participating in scuba diving (figure 8.3); the ability of the marine environment to satisfy the diver’s expectations (figure 8.4); and the ability of the dive industry to provide the level of services desired by divers (figure 8.5). The action grids illustrate the relationship between the importance and satisfaction of various features of the dive trip experience to divers. Plot points are numbered

and correspond with the features listed in the legends. A synopsis of the results follows the action grids.

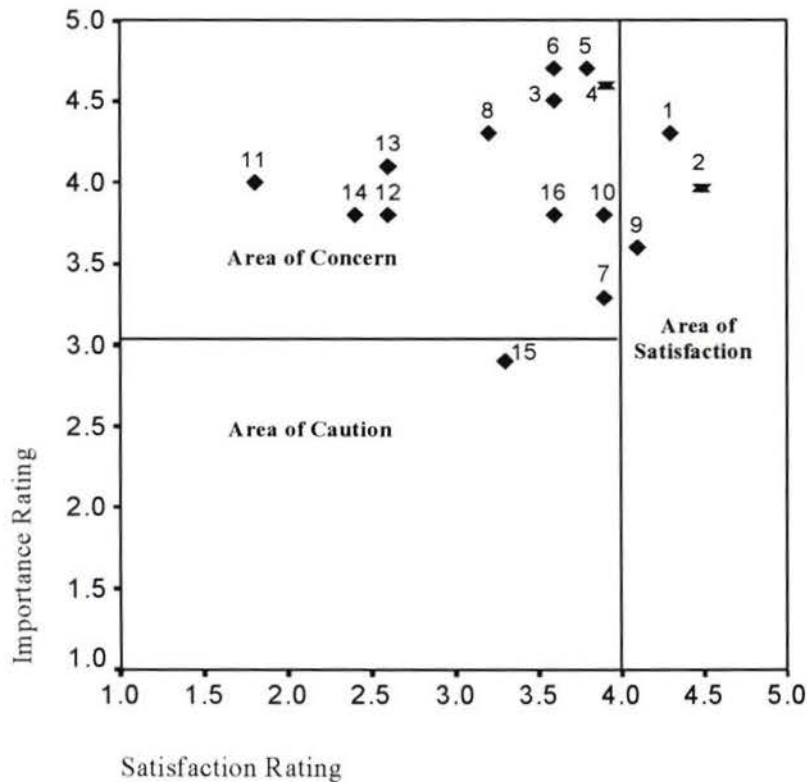
Figure 8.3. Action Grid Illustrating The Importance And Satisfaction Of Various Reasons For Diving To Divers In Phuket, Thailand.



Legend

1. Interest in marine flora and fauna
2. Wilderness/nature experience
3. Looking for adventure
4. Interest in underwater photography
5. Interest in a special underwater feature
6. Explore new environments
7. Expand my knowledge
8. Develop my diving skills
9. Challenge my diving skills
10. Image of the sport
11. Be with friends/family/associates
12. Escape the demands of every day life
13. Social activity
14. Exercise

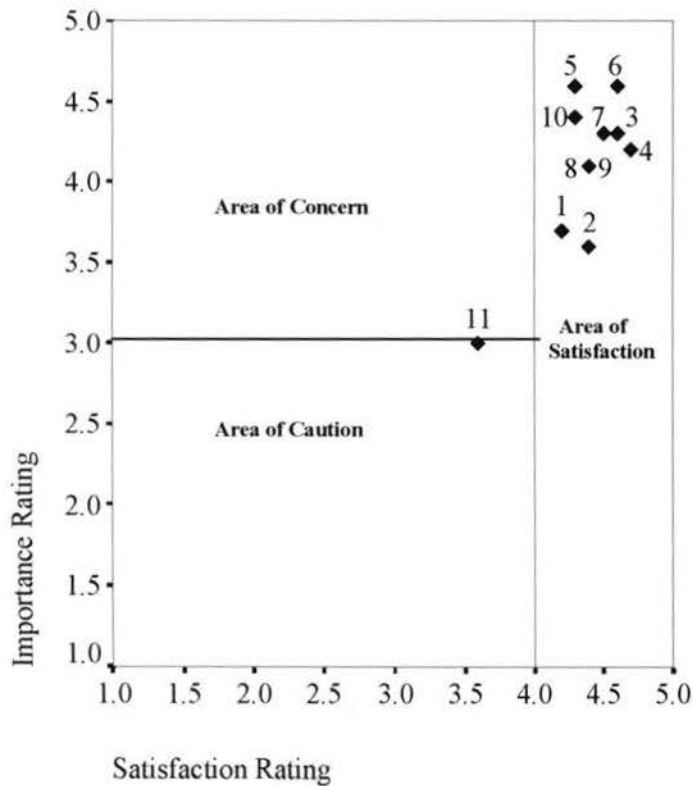
Figure 8.4. Action Grid Illustrating The Importance And Satisfaction Of Various Environment Features To Divers In Phuket, Thailand.



Legend

1. Good weather
2. Warm water
3. Underwater visibility
4. Variety and amount of marine life
5. Clear unpolluted dive sites
6. Undamaged dive sites
7. Easy dive conditions
8. No crowding by other divers
9. Good above water scenery
10. Unique formations
11. Whale sharks
12. Other sharks
13. Manta rays
14. Turtles
15. Good photo opportunities
16. Opportunity to learn more about marine environments

Figure 8.5. Action Grid Illustrating The Importance And Satisfaction Of Various Service Features To Divers In Phuket, Thailand.



Legend

1. Accommodation on boat
2. Food on boat
3. Information provided by dive master
4. Friendliness of crew
5. Good safety procedures on boat
6. Good dive master
7. Good dive buddy
8. Enjoyable dive group
9. High quality of general service
10. Commitment to environment by dive shop and crew
11. Additional activities (dive courses, shore trips, snorkeling etc.)

8.3.1. Features of 'Satisfaction'

The action grids highlight the aspects of the Phuket dive experience that are sufficiently satisfying to divers, regardless of the importance placed on them. The diving motivations fulfilled by the Phuket experience include the divers' interest in marine flora and fauna, and their desire to escape the demands of everyday life. The presence of good weather, warm water, and good above water scenery were satisfying environmental features, and were also satisfied by virtually all of the service features provided by the dive industry.

Although these features appear to meet the expectations of the divers, they must not be excluded from management consideration. Since the grid is created using the mean, or average satisfaction scores, it is reasonable to expect that many of the divers will be less satisfied than indicated on the grid. While the need for specific improvements is not indicated at this time, management actions must be directed to ensure that the quality of these features is maintained. This is particularly important when considering the environment and setting features, given the importance of resource quality to diving, both in terms of attracting divers to the area, and satisfying them once they have arrived.

8.3.2. Features of 'Caution'

The action grids identified several features as 'area of caution'. These features were rated as both less important and less satisfying to divers. Numerous motivations for diving, such as the diver's interest in underwater photography, interest in special underwater features, the image of the sport, the opportunity to partake in a social activity and exercise fell into the 'area of caution'. Other areas of caution include the presence of good photo opportunities, and the additional activities provided on the dive boats.

The need for management attention to improve the features identified as 'areas of caution' is not an immediate priority at this time, however, improvement of these features would contribute to the provision of a dive experience that is more satisfying overall. At the very least, management attention must be directed to ensure that the quality of these aspects of the dive trip is maintained.

8.3.3. Features of 'Concern'

Priority for management action should be given to the dive trip features located in the 'area of concern'. These features were rated as 'somewhat or very important' to divers, yet fell into the 'unsatisfying or neutral' on the satisfaction scale. Using the action grid approach, it is clear the Phuket dive trip did not meet the diver's expectations in several areas. Evaluation of the

grids emphasizes numerous aspects of the Phuket dive experience, particularly dive motivations and environment features, that are areas of concern. These features fall into three broad categories:

1. Opportunity to experience the natural environment
 - wilderness/nature experience
 - variety and amount of marine life
 - good underwater visibility
 - clear, unpolluted dive sites
 - undamaged dive sites
 - easy dive conditions
 - unique formations
 - whale sharks
 - other sharks
 - manta rays
 - turtles

2. Educational opportunities
 - expand knowledge
 - explore new environments
 - develop dive skills
 - opportunity to learn about the marine environment

3. Social/personal opportunities
 - looking for adventure
 - no crowding by other divers
 - be with family/friends/associates

8.4. Disaggregate Results

To highlight differences in the responses of divers who took day trips and those who took liveboards, and between divers of different diver and ecotourist specialization groups, results are also presented in disaggregate form.

8.4.1. Action Grids and Trip Type

Earlier analyses (chapters five and six) have highlighted differences between day trip and liveboard divers in terms of their expectations for, and satisfactions with their dive trips. Because the biophysical and social characteristics of day and liveboard dive trips differ considerably, the goal of this section is to assess the relationship between diver expectations and satisfactions for the two independently. Action grids illustrating the relationship between

importance and satisfaction were created of the motivations for participating in diving and environmental features for the two trip types individually. The results are presented in figures 8.6, 8.7 and 8.8. The action grid legends, tables 8.1, 8.2 and 8.3, show the different areas of concern for day and liveaboard dive trips. A synopsis of the results follows the grids.

Figure 8.6. Action Grids Illustrating The Importance And Satisfaction Of Various Reasons For Participating In Diving: A Comparison Of Day Trip And Liveaboard Divers.

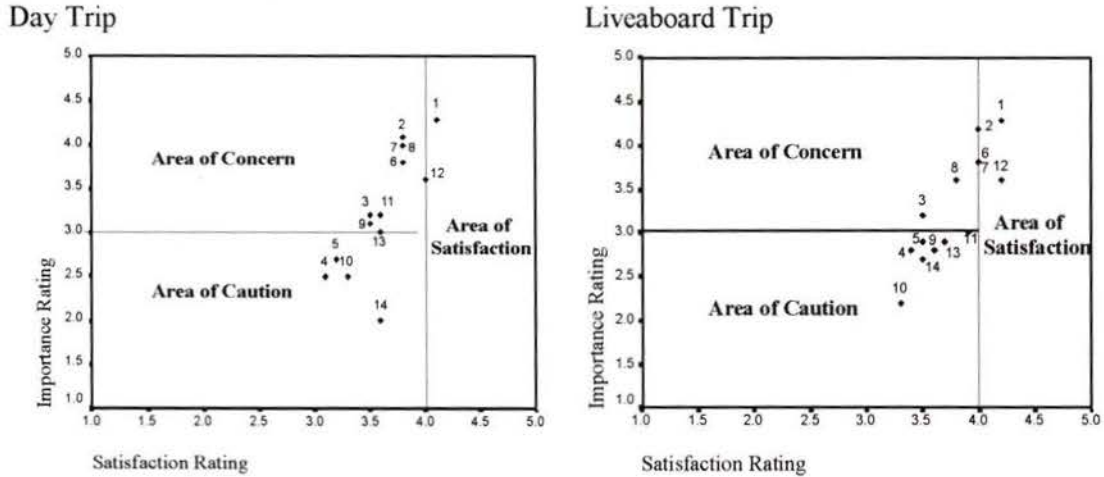


Table 8.1. Legend Indicating The Diving Motivation ‘Areas Of Concern’ For Both Trip Types.

Motivations for Diving	Areas of Concern	
	Day Trip	Liveaboard
1. Interest in marine flora and fauna.....		
2. Wilderness/nature experience.....	X	
3. Looking for adventure.....	X	X
4. Interest in underwater photography.....		
5. Interest in special underwater feature.....		
6. Explore new environments.....	X	
7. Expand my knowledge.....	X	
8. Develop dive skills.....	X	X
9. Challenge dive skills.....	X	
10. Image of the sport.....		
11. Be with friends/family/associates.....	X	
12. Escape demands of everyday life.....		
13. Social activity.....		
14. Exercise.....		
Total Areas of Concern	7	2

Figure 8.7. Action Grids Illustrating The Importance And Satisfaction Of Various Environment And Setting Features: A Comparison Of Day Trip And Liveboard Divers.

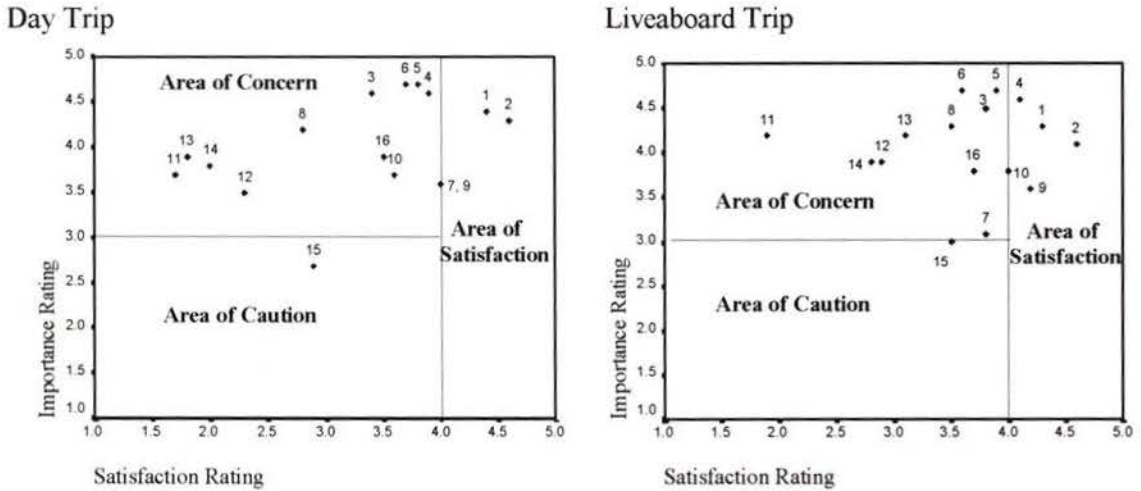


Table 8.2. Legend Indicating The Environment / Setting Feature ‘Areas Of Concern’ For Both Trip Types.

Environment and Setting Features	Areas of Concern	
	Day Trip	Liveboard
1. Good weather.....		
2. Warm water.....		
3. Good underwater visibility.....	X	X
4. Variety and amount of marine life.....	X	
5. Clear unpolluted dive sites.....	X	X
6. Undamaged dive sites.....	X	X
7. Easy dive conditions.....		X
8. No crowding by other divers.....	X	X
9. Good above water scenery.....		
10. Unique formations.....	X	
11. Whale sharks.....	X	X
12. Other sharks.....	X	X
13. Manta rays.....	X	X
14. Turtles.....	X	X
15. Good photo opportunities.....		X
16. Opportunity to learn about marine environments.....	X	X
Total Areas of Concern	11	10

Figure 8.8. Action Grids Illustrating The Importance and Satisfaction Of Dive Trip Service Features: A Comparison of Day Trip and Liveaboard Divers.

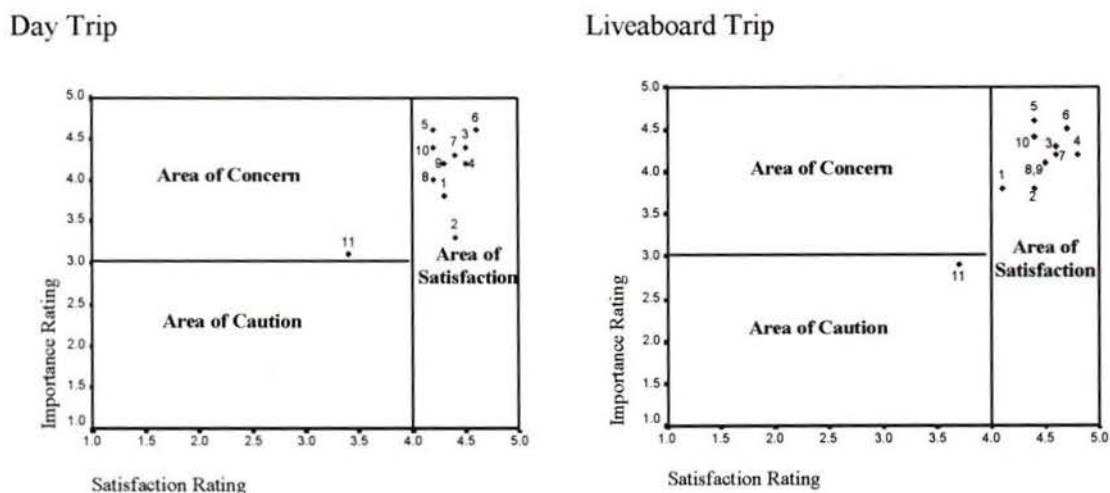


Table 8.3. Legend Indicating The Service Feature 'Areas Of Concern' For Both Trip Types.

Service Features	Areas of Concern	
	Day Trip	Liveaboard
1. Accommodation on boat.....		
2. Food on boat.....		
3. Information provided by dive master.....		
4. Friendliness of crew.....		
5. Good safety procedures on boat.....		
6. Good dive master.....		
7. Good dive buddy.....		
8. Enjoyable dive group.....		
9. High quality of general service.....		
10. Commitment to environment by dive company...		
11. Additional activities on boat.....	X	
Total Areas of Concern	1	0

In addition to highlighting numerous differences between day and liveaboard dive trips, the charts illustrate similarities as well. While many items are identified as areas of concern for both trip types, the features that are trip-type specific are of particular interest in this section. On a purely numerical basis, it is evident that more trip features fall into the area of concern for day trips than for liveaboard trips. This may be because day trip dive sites are used very intensively and are generally considered to be in less pristine condition than the liveaboard sites, as previously discussed in chapter two.

Several elements are of particular concern on day trips, with regard to specific reasons for diving. The opportunity to have a wilderness/nature experience, to explore new environments, expand knowledge and develop dive skills fall into the area of concern on day trips only. Environmental features such as the variety and amount of marine life and presence of unique formations are also of concern only to day trip divers. While these factors are undoubtedly related to the physical conditions at the dive sites, they are also likely connected to the social conditions as well. For example, small numbers of divers and low levels of visitation in high quality, undisturbed environments are considered important aspects of a wilderness experience. Given the high use intensity and often-crowded conditions at the day trip dive sites, it is not surprising that some of the features do not sufficiently satisfy many divers.

This section has identified issues that are of particular concern at the day trip sites and the liveboard sites independently to ensure that any differences between them are highlighted, and taken into consideration in management planning and actions where required. As previously discussed, the condition of the marine environment is of concern at many of the sites utilized by Phuket dive operators. When considered in the context of satisfying the diver's motivations and expectations, the state of the day trip sites appears particularly worrying. Reevaluation of the use of these 'open access resources' is clearly required, as this analysis suggests that many of the conditions that attract divers to the area are failing to satisfy their expectations.

While there is not a 'quick fix' for improving the environmental conditions at the dive sites, dive operators can improve the learning opportunities so valued by the divers, and minimize new diving-related damage by implementing training programs for their staff members. Dive guide education programs, intended to improve the frequency and effectiveness with which environmental dive briefings are given to all dive groups, will be discussed in chapter nine. Ultimately, any measures taken to improve the learning and exploring experiences would likely result in increased diver satisfaction overall.

8.4.2. Action Grids and Specialization

Section 8.3 used action grids to highlight dive trip features that require management attention. Because earlier analyses (chapter seven) also illustrated that divers are not a homogeneous group in terms of the importance they place on various features and their satisfaction with such features following their trip, it is necessary to consider the concept of specialization in the context of management priorities and actions.

The objectives of this section are to obtain a better understanding of the differences between individuals at various levels of both the diver and ecotourist specialization indexes, and

to identify the areas of satisfaction and concern for the different groups, with the overall goal of guiding management actions that contribute to the sustainability of the dive industry while providing positive visitor experiences for all divers.

To illustrate the differences between diver and ecotourist specialization groups, individual importance-satisfaction scatterplots were produced for low, medium and high specialists. These are available in appendix 4 and appendix 5. Summary tables were created to highlight the strengths and weaknesses of the Phuket experience for divers at each specialization level, and are discussed below.

8.4.2.1. Diver Specialization Results

In chapter seven, table 7.5 and figures 7.2 and 7.3 showed that the importance placed on various dive trip features, and their corresponding satisfaction ratings differed based on the level of diver specialization. These results were used to create action grids illustrating the differences highlighted between the specialization groups. These results are summarized and presented in tables 8.2-8.4, where the specific areas of satisfaction and concern for each specialization group are reported. It is clear that on a purely numerical basis, fewer dive trip features fall into the area of satisfaction as diver specialization increases.

Table 8.4. Reasons For Participating In Diving- Areas Of Satisfaction And Concern.
A Comparison Of Low, Medium And Highly Specialized Divers.

Possible Dive Motivation	Areas of Satisfaction			Areas of Concern		
	Low	Medium	High	Low	Medium	High
Interest in marine flora and fauna.....	☺	☺				X
Wilderness/nature experience.....	☺				X	X
Looking for adventure.....				X	X	X
Interest in underwater photography.....						X
Interest in a special underwater feature...					X	
Explore new environments.....				X	X	X
Expand my knowledge.....	☺				X	X
Develop my diving skills.....	☺				X	X
Challenge my diving skills.....				X	X	
Image of the sport.....						
Be with family, friends, associates.....				X	X	X
Escape the demands of every day life...	☺	☺				X
Social activity.....				X		
Exercise.....						
Total	5	2	0	5	8	9

Features such as the interest in marine flora and fauna, wilderness/nature experience, the opportunity to expand knowledge, develop dive skills and escape the demands of every day life are areas of satisfaction for less specialized divers, however, they fall into the area of concern for more specialized divers. In fact, for highly specialized divers, not a single dive motivation falls into the area of satisfaction.

Table 8.5. Dive Trip Environment Features- Areas Of Satisfaction And Concern.
A Comparison Between Low, Medium And Highly Specialized Divers.

Environment Features	Areas of Satisfaction			Areas of Concern		
	Low	Medium	High	Low	Medium	High
Good weather.....	☺	☺	☺			
Warm water.....	☺	☺	☺			
Good underwater visibility.....				X	X	X
Variety and amount of marine life...	☺	☺				X
Clear unpolluted dive sites.....				X	X	X
Undamaged dive sites.....				X	X	X
Easy dive conditions.....				X	X	
No crowding by other divers.....				X	X	X
Good above water scenery.....	☺	☺	☺			
Unique formations.....				X	X	X
Whale sharks.....				X	X	X
Other sharks.....				X	X	X
Manta rays.....				X	X	X
Turtles.....				X	X	X
Good photo opportunities.....						X
Opportunity to learn about marine environment.....				X	X	X
Total	4	4	3	11	11	12

Environmental features such as the presence of good weather, warm water and good above water scenery fell into the area of satisfaction for all diver specialization groups. The variety and amount of marine life were satisfying for low and medium dive specialists, but were of concern to highly specialized divers. The presence of easy dive conditions was of concern to low and medium specialists only. The remainder of the environmental features fell into the area of concern for all levels of specialists. While the level of diver specialization does indicate subtle differences between groups, it is evident that the majority of the dive trip environment and setting features are of concern to many divers.

Table 8.6. Dive Trip Service Features- Areas Of Satisfaction And Concern.
A Comparison Between Low, Medium And Highly Specialized Divers.

Service Features	Areas of Satisfaction			Areas of Concern		
	Low	Medium	High	Low	Medium	High
Accommodation on boat.....	☺	☺	☺			
Food on boat.....	☺	☺	☺			
Information provided by dive master.....	☺	☺	☺			
Friendliness of crew.....	☺	☺	☺			
Good safety procedures on boat.....	☺	☺	☺			
Good dive master.....	☺	☺	☺			
Good dive buddy.....	☺	☺	☺			
Enjoyable dive group.....	☺	☺	☺			
High quality of general service.....	☺	☺	☺			
Commitment to environment by dive company	☺	☺	☺			
Additional activities on boat.....				X	X	
Total	10	10	10	1	1	0

With the exception of the additional activities available on the boat, all dive trip service features fell into the area of satisfaction for low, medium and highly specialized divers.

Overall, the dive motivation and environment feature action grids indicate that it becomes more challenging for resource and dive industry managers to provide a satisfying experience to divers as they become more specialized. Because of their relative inexperience, less specialized divers have general expectations of their Phuket dive trip, and they evaluate their experience accordingly. Highly specialized divers, on the other hand, have more specific expectations, and the analysis shows that they find fewer dive trip features satisfying. This concurs with the finding that overall, dive trip satisfaction decreases as the level of diver specialization increases (chapter seven).

The differences found between diver specialization groups highlight the importance of breaking down the dive population into more homogeneous subgroups prior to this type of analysis. Because the overall goal is to ensure the sustainability of the dive industry through management that maintains the quality of the environment and provides enjoyable dive experiences, using the grids to guide management without classifying the divers may result in decisions that are not appropriate and effective for all divers.

8.4.2.2. Ecotourist Specialization Results

In chapter seven, tables 7.12 and 7.13 and figure 7.6 showed that the importance placed on various dive trip features, and their corresponding satisfaction ratings differed based on the level of ecotourist specialization. These results were used to create action grids that show

differences between specialization groups. The specific areas of satisfaction and concern for each specialization group are summarized in tables 8.4, 8.5 and 8.6, however, individual ecotourist specialization grids are included in appendix 5. While fewer dive trip features were satisfying to divers as the level of diver specialization increased, the opposite is true for ecotourist specialization. Quantitatively, more reasons for participating in diving and environment features fell into the area of satisfaction and fewer fell into the area of concern as the level of ecotourist specialization increased.

Features such as a wilderness/nature experience, the opportunity to explore new environments, expand knowledge and develop diving skills are areas of satisfaction for highly specialized ecotourists, however, they fall into the area of concern for medium and low specialized ecotourists. Interest in a special underwater feature and the opportunity to challenge dive skills were areas of concern for highly specialized ecotourists only.

Table 8.7. Reasons For Participating In Diving- Areas Of Satisfaction And Concern.
A Comparison Of Low, Medium And Highly Specialized Ecotourists.

Possible Dive Motivation	Areas of Satisfaction			Areas of Concern		
	Low	Medium	High	Low	Medium	High
Interest in marine flora and fauna.....	☺	☺	☺			
Wilderness/nature experience.....			☺	X	X	
Looking for adventure.....				X	X	X
Interest in underwater photography.....						
Interest in a special underwater feature...						X
Explore new environments.....			☺	X	X	
Expand my knowledge.....			☺	X	X	
Develop my diving skills.....			☺	X	X	
Challenge my diving skills.....						X
Image of the sport.....						
Be with family, friends, associates.....				X		X
Escape the demands of every day life.....	☺	☺	☺			
Social activity.....				X		X
Exercise.....						
Total	2	2	6	7	5	5

The presence of clear, unpolluted dive sites and unique formations fell into the area of satisfaction for highly specialized ecotourists, yet were areas of concern for low and medium specialists. The variety and amount of marine life and presence of good above water scenery were satisfying to medium and highly specialized divers, yet fell into the area of concern for low specialists. The presence of good photo opportunities on the dive trip was an area of concern to highly specialized ecotourists only.

Table 8.8. Dive Trip Environment Features- Areas Of Satisfaction And Concern.
A Comparison Of Low, Medium And Highly Specialized Ecotourists.

Environment Features	Areas of Satisfaction			Areas of Concern		
	Low	Medium	High	Low	Medium	High
Good weather.....	☺	☺	☺			
Warm water.....	☺	☺	☺			
Good underwater visibility.....				X	X	X
Variety and amount of marine life...		☺	☺	X		
Clear unpolluted dive sites.....			☺	X	X	
Undamaged dive sites.....				X	X	X
Easy dive conditions.....				X	X	X
No crowding by other divers.....				X	X	X
Good above water scenery.....		☺	☺	X		
Unique formations.....			☺	X	X	
Whale sharks.....				X	X	X
Other sharks.....				X	X	X
Manta rays.....				X	X	X
Turtles.....				X	X	X
Good photo opportunities.....						X
Opportunity to learn about marine environment.....				X	X	X
Total	2	4	6	13	11	10

With the exception of the additional activities available on the boat, all dive trip service features fell into the area of satisfaction for low, medium and highly specialized ecotourists.

Table 8.9. Dive Trip Service Features- Areas Of Satisfaction And Concern.
A Comparison Between Low, Medium And Highly Specialized Ecotourists.

Service Features	Areas of Satisfaction			Areas of Concern		
	Low	Medium	High	Low	Medium	High
Accommodation on boat.....	☺	☺	☺			
Food on boat.....	☺	☺	☺			
Information provided by dive master.....	☺	☺	☺			
Friendliness of crew.....	☺	☺	☺			
Good safety procedures on boat.....	☺	☺	☺			
Good dive master.....	☺	☺	☺			
Good dive buddy.....	☺	☺	☺			
Enjoyable dive group.....	☺	☺	☺			
High quality of general service.....	☺	☺	☺			
Commitment to environment by dive company	☺	☺	☺			
Additional activities on boat.....				X	X	X
Total	10	10	10	1	1	1

Overall, the dive motivations and environment features action grids suggest that of the three ecotourist specialization groups, the Phuket dive experience is most satisfying to the highly specialized. While these divers have very specific ideas about what they would like to experience on their trip, the results suggest that the opportunities provided on the Phuket dive trip met their expectations overall.

8.5. Summary and Discussion

The objective of this chapter was to identify the strengths and weaknesses of the Phuket dive experience, with the overall goal of highlighting areas that require management attention. Modified action grids were used to display the relationship between the importance of various trip features and the diver's satisfaction with such features following their dive trip. The grids provide an easy to interpret method of identifying issues that may interfere with the sustainability of the dive industry.

The marine tourism industry is an important component of the local economy. To ensure the long-term viability of the Phuket dive industry, both the provision of high quality visitor experiences and a desirable marine environment must be maintained. By illustrating the relationship between the diver's expectations for their trip and their satisfaction with the dive experience, areas that require immediate attention from management were highlighted. These can be used to set management priorities and guide the resulting actions.

The results indicate that the provision of dive trip 'services' in Phuket is a true strength of the industry. The divers appear to have been very satisfied overall with the services provided to them, and it is clear that Phuket's reputation for supplying a high quality of general service to divers is well deserved. While improvement of such aspects of the overall dive experience is not a management priority, care should be taken to ensure that the quality of the services provided is maintained.

Not all aspects of the Phuket dive experience were sufficiently satisfying to divers, and numerous weaknesses were highlighted. Many of the areas of concern are related to the condition of the marine environment. Unfortunately, previous analyses (see chapter five) have illustrated that these same features are main motivating factors for divers in their decision to visit Phuket. Characteristics such as the presence of clear, unpolluted, undamaged dive sites, good underwater visibility, a wilderness / nature experience and the presence of large marine life are all features that are highly valued by divers, as are various educational and personal opportunities. The results indicate that the Phuket dive experience is not meeting the expectations that the divers have for their trips in these areas. If the desirability of Phuket as a dive tourism destination is to

be maintained, a great deal of work on the part of the resource and dive industry managers is required to improve the provision of such features. While priorities for management are clearly identified, and actions should be guided accordingly, care must be taken to ensure that the improvement of such features does not occur at the expense of other facets of the dive trip experience.

Action grids were created for day and liveaboard trips individually with the goal of highlighting issues that are trip-type specific. Many aspects of the dive trip were of concern for both the local day trip sites and the remote liveaboard sites. Generally, however, more features fell into the area of concern for day trips than for liveaboard trips. Features such as the variety and amount of marine life, the opportunity to have a wilderness/nature experience and expand knowledge were not sufficiently satisfying to divers who took day trips to the local sites surrounding Phuket. This is likely related to both the physical and social conditions present at the day trip dive sites. As previously discussed, these sites are used daily by a large number of individuals. The sites are often crowded, with many divers in the water, and numerous boats on the surface. This high intensity of use results in varying degrees of human induced damage at the dive sites², and also has social impacts as well. The presence of many boats and large numbers of visitors at the day trip dive sites detracts from the wilderness feeling that is an important component of the experience to many divers. Related comments from divers include:

“On the King Cruiser dive it was too confusing when we met up with the groups from the other boats. I didn’t know which way to go and had a hard time staying with my group. It was so crowded and busy. There should not be so many divers at one site for both enjoyment and safety reasons.”

“There were too many divers at Anemone Reef. It makes the dive less enjoyable.”

“Too many boats, too many divers, too much noise underwater, many dead corals and a lot of damage to the reef.”

“I am very satisfied with the quality of service provided by this company. However, other aspects of the trip left a lot to be desired. For example, there was too much crowding at both the sites we visited.”

“There are just too many divers stirring up stuff creating bad visibility.”

“I think something really needs to be done about the boat traffic at the dive sites. First, there are too many dive boats. This causes unsafe situations when there are so many divers in the water. Secondly, there are just too many divers at the dive sites. I know that Racha is used to train new divers, but isn’t there something that can be done to spread the divers out? We spent

² The topic of diver impacts on the reef is the focus of chapter nine.

more time dodging other boats and divers than we did looking at the marine life. I would gladly pay a little more to have a more intimate, enjoyable dive!”

While the degree of crowding is generally much more pronounced at the local day trip sites, it is a concern to many liveboard divers as well, as are the conditions of the marine environment. Related comments from divers include:

“There were too many divers at the same time at Richelieu Rock.”

“The dive sites all looked overcrowded with divers because there are only a few dive sites in the area.”

“Occasionally dives involved twelve or so divers all together, struggling to see small stuff because all the big stuff is gone, which got a bit difficult and resulted in inadvertent coral damage.”

“The most important thing I’d like to say is about the number of divers on the same dive site. I’d rather pay more to avoid diving with fifty divers at Elephant Head Rock or Richelieu.”

“Too many divers, few fish, broken coral, bad visibility. Overall, very disappointing. At least the service was good.”

The analyses presented in this chapter suggest that many of the conditions that attract divers to Phuket are failing to satisfy their expectations. Comments from divers who took both day trips and liveboards support this finding:

“Broken coral, very few large fish, just the things we came to see.”

“Dive sites are generally not excessively exciting. Myths about whale shark presence in the Similans should not be propagated!”

“The trip itself was good. The dive sites are overrated.... No way in the ten best in the world. Limited corals, mostly rocks. Average visibility and sea life.”

“I have been slightly disappointed with the amount of wildlife at the five star dive sites. Where are all the fish everyone is talking about?”

“Not one of the ten best spots!”

“Marine life not as abundant as described in the dive books. If I knew before what I know now I would have gone elsewhere.”

“Poor visibility, few large pelagics unlike advertised, Similan had very little fish life at all, few unspoiled dive sites”.

“We came here for top notch diving. The service by our company was excellent and they gave us lots of extras. But truthfully, the diving left a lot to be desired. We had a good time because of our dive group but we’re leaving disappointed.”

Reevaluation of the use and management of the dive sites might limit the environmental and social impacts and provide a more satisfying experience to divers.

Action grids were made for each of the diver specialization groups to highlight differences between individuals of various diver specialization levels, and to identify areas of satisfaction and concern for the different groups.

Overall, the results indicate that perhaps the greatest challenge for resource and dive industry managers is to provide an experience that meets the expectations of the more specialized divers, particularly in terms of the conditions of the marine environment. Because highly specialized divers have more and varied diving experience, they have stronger and more specific expectations and higher standards of environmental quality for their dive trips than do those who are less specialized. A potential outcome of this is that Phuket may stop attracting the highly specialized divers. This is of particular concern because individuals in this group are most likely to travel to Phuket specifically for diving, and in the past, have also made up the majority of the regions repeat customers, not to mention the fact they contribute an immense amount of money to the Thai economy each year. Of all the divers surveyed, this group appears to be the most likely to avoid Phuket altogether in the future, in favor of other, more satisfying dive locations.

Action grids were also made for the ecotourist specialization groups to identify differences between individuals of various specialization levels and to highlight areas of satisfaction and concern for the different groups. While much of the literature on ecotourists suggests that specialized ecotourists are often the hardest to 'please' because they are more demanding in terms of the environmental quality and the lack of human impacts they desire from their experience (e.g. Burton 1998; Shackley 1996), such findings were not evident for this study.

Chapter seven reported that as ecotourist specialization increases, the satisfaction with the dive trip overall also increases. In fact, highly specialized ecotourists gave their dive experience an overall mean score of 8.45 (on a ten-point scale), which is significantly higher than any other specialization group, on both the ecotourist and dive scale. The analyses presented in this chapter also indicate that specialized ecotourists were more satisfied with many of the dive trip features than were less specialized ecotourists. Thus, highly specialized ecotourists appear to be more satisfied with the Phuket dive experience both at the general level (overall satisfaction) and the specific level (dive trip features and motivations).

One possible explanation for this is that because the type of experience sought is simply nature based, the natural environment need not be 'pristine' to provide enjoyable learning

experiences (Chirgwin & Hughes 1997); the divers have the opportunity to learn and expand their knowledge during each and every dive, regardless of the marine environmental conditions present at the dive sites. Thus, the nature of the desired experience (essentially, an underwater experience that provides learning opportunities) makes the actual experience inexplicably satisfying. Some of the more environmentally conscious dive companies encourage and provide learning experiences for their divers regardless of the conditions at the particular dive sites they visit. While most dive companies make conscious decisions to stay away from damaged reefs, at least two Phuket operators take their divers to reefs that have been obviously damaged by humans. While this is not necessarily the type of encounter many divers are expecting, field observations indicate it is an effective ‘awareness raising’ exercise. The dive staff explain the suspected cause of the damage (e.g. dragging boat anchors over the reef, improper finning or personal contact between divers and the reef, dynamite fishing, discarded fishing nets etc.), and discuss the impacts on the marine flora and fauna. They also describe the changes that occur over time following such disturbances and damage, thereby illustrating both the fragile nature of the reefs and the timeline for their development. Responses from the divers (both verbal and written), following such experiences were almost invariably positive:

“We noticed previous carelessness toward the marine environment. Our dive master explained in our pre-dive briefing what we would see down there³. He pointed it out underwater and then we talked about it after the dive. It means so much more when you see what people are capable of. It has made me a much more cautious diver, that’s for sure.”

“The crew was protective of the reef, cutting loose old ropes to free environment and making sure we all respected it. They really took the time to point out damage, and correct it when they could. Our dive master made a point of showing us what was caused by other careless divers, so we won’t make the same mistakes, I guess. It was a good learning experience.”

“There was a lot of evidence of dynamite fishing, tons of corpses on the bottom, destroyed coral and sounds from explosions in the distance. It was terribly sad and distracted me from the beauty and diversity remaining. In addition, we saw many illegal shark fisherman and they were successful. Overdiving and fishing seem to be getting rid of the very creatures people come to see. We spent a lot of time discussing this during our trip, and thanks to our dive master, I think we have all come away better divers, with more respect for the marine world. It is a sad way to learn, but I think every diver should experience it. It really changed the way I think and act underwater.”

³ This diver is referring to a large anchor track at one of the popular day trip dive sites. A boat anchor was dragged across the reef, destroying an area thirty metres long by two metres wide in the process.

“The diving crew was extremely knowledgeable and highly committed to protecting the marine environment. They didn’t hesitate to share their knowledge with us, even when it meant pointing out the stuff that most dive staff never talk about- the damage caused by diving.”

“Well, it wasn’t the dive trip I expected, that’s for sure. But I still give it an A+ because of what a positive learning experience it was for me and my fellow divers. On the first day, our dive guide showed us some of the most amazing dive sites I’ve ever seen. Then she took us to some horribly degraded sites and said ‘You see this? It used to be just as beautiful. This is what happens when people don’t give a ****.’ It’s hard to believe that people could cause such devastation.”

“During our dives, we learned that conscious man can greatly help nature. Natural man is ten times worse than any nightmare or any natural disaster or animal. Thanks to our dive guide for helping us to recognize this.”

While these educational exercises may have resulted in anger and frustration among divers, they did not appear to result in diminished satisfaction. In fact, the findings and comments suggest that such experiences influenced the divers in a positive way by enhancing their understanding of the coral reef environment, and its susceptibility to damage at the hands of humans. The comments also lend credibility to the findings presented in chapter seven on the increased satisfaction of the more specialized ecotourists.

Another theory for the increased satisfaction of the specialized ecotourists is that perhaps they actively seek out the experiences they desire, particularly in terms of education (this includes self education- guide books, questions etc), rather than waiting for someone to bring the experience to them. This is similar to the ‘nature of involvement’ theory (Ryan 1995), which suggests that the more committed a person is to a course of action, the higher the degree of success. Additionally, many dive staff will take the time to provide information at length to those divers who indicate an interest in learning about the marine environment and marine conservation issues.

Regardless of the reasons, examination of the action grids suggests that the Phuket dive community did a reasonable job of satisfying the expectations of the highly specialized ecotourists. As the results suggest that highly specialized divers may avoid Phuket in the future in favor of more ‘pristine’ locations, the dive industry may wish to consider increasing the educational aspects of their trips so that they appeal to more specialized ecotourists. (Environmental education and interpretation is the focus of chapter ten.) Ultimately, the most

desirable scenario is to act to minimize environmental and social degradation at the dive sites, and thereby ensure the provision of satisfying experiences to divers of all specialization levels. As with diver specialization, the differences found between ecotourist specialization groups highlight the importance of breaking down the dive population into more uniform subgroups, as using the action grids to guide management without classifying the divers may result in decisions that are not appropriate and effective for all divers.

Overall, the fact that so many of the attributes fall into the 'area of concern' has implications for the future of diving in Phuket, especially because the success of a dive tourism venture depends so strongly on the quality of the marine environment. Leong and Tan (1992) suggest that the 'features of concern' are those in which the competition could most easily take advantage, possibly drawing divers to other dive destinations throughout the world rather than Phuket. In recent years, the trend among divers and dive operators has been to seek new destinations when the conditions of the present sites are no longer satisfying to divers (Davis & Tisdell 1996). This trend is undesirable and unsustainable both environmentally and economically. Throughout the world, dive operators are approaching a stage where the availability of new, pristine dive sites is declining. Consequently, growing numbers of divers are being concentrated at a finite number of dive sites, resulting in environments and experiences that are increasingly less satisfying to dive tourists (Davis *et al.*, 1996). Presently, this appears to be occurring in Phuket. Thus, efforts to maintain satisfactory conditions at the existing dive sites should be emphasized.

The conservation and sustainable use of Phuket's coral reefs is a significant challenge facing the Phuket diving community, however, it is not only an issue in terms of diving. This study has highlighted issues that are related directly to diving, yet also have implications for other reef patrons. Many groups in Phuket rely on the marine environment for food, livelihoods and recreation activities and each of these groups influence the environment in a variety of ways. Thus, the condition of the marine environment is of concern to the wider Phuket community as well. Groups involved in the use and maintenance of the marine environment include the local citizens, the fishing community, the marine tourism community, the scientific community, the local Phuket government, the Federal Government and Royal Forestry Department, the Tourism Authority of Thailand, the conservation community and local NGO's, and the wider tourism community. Successful management of these issues will require the involvement and cooperation of all groups involved in reef use and management.

Chapter 9. DIVING IMPACTS

Until the 1980's, diving was perceived as a low impact activity compatible with the sustainable use of marine resources. The rapid increase in recreational diving throughout the world and the ongoing improvements in diving and boating technology have meant that growing numbers of divers can travel to more remote dive locations, venture deeper into the reefs and stay down longer than in previous years. As the popularity of dive tourism and the number of active divers continue to increase, the potential for concurrent environmental impacts is likely. While still considered to be less damaging than extractive uses of the reef, such as dynamite fishing and coral mining, a growing body of literature points to diving as a source of reef degradation.

An important goal of this research project is to contribute to the sustainability of the Phuket dive industry. As previous chapters have shown, the appeal of Phuket as an international dive tourism destination is centered on the marine environment, and thus, this economically important industry would not exist without the coral reefs. Diving has the potential to become a long-term tourist attraction, an on-going, non-extractive use of the region's reefs, and a sustainable contributor to the Phuket economy. To realize this potential, however, the adverse environmental effects of diving and its infrastructure must be identified, and management actions that sustain the marine ecosystems upon which the dive industry depends must be implemented.

In order to manage the use of coral reefs to ensure environmental conditions that provide enjoyable visitor experiences, it is important to understand the impacts that divers perceive their sport to have on the reef environment. It is also necessary to be aware of the impacts that divers actually view during their trips, as these may influence their feelings and enjoyment. Thus, the divers represent a valuable resource for gaining information about the presence of impacts and the acceptability of environmental change.

This section will review the literature on the impacts of diving on the coral reef environment. The results of the 'impact' section of the diver survey are presented, first in aggregate form and then disaggregated by trip type, diver, and ecotourist specialization. A summary and discussion of the implications of these findings for the Phuket dive industry conclude the chapter.

9.1. Literature Review

There is growing consensus among marine scientists that coral reefs throughout the world are facing severe problems and are in a serious state of decline (e.g. see Jameson *et al.*, 1995; Hodgson 1999; Risk 1999). Almost sixty percent of the world's coral reefs are presently at risk

because of human disturbance (Burke *et al.*, 2002). There are many threats facing reef ecosystems, including coastal development, ocean warming and the over-exploitation of marine flora and fauna. When compared to the magnitude of these threats, scuba diving is commonly considered a sustainable use of the coral reef ecosystems. While diving is generally less damaging than other extractive uses of the reef, it is not a benign activity, and a significant body of literature indicates diving is a source of reef damage (e.g. see Salm & Clarke 1989; Tilmant 1987; Hawkins & Roberts 1992; Talge 1992; Marion & Rogers 1994; Allison 1996; Prior *et al.*, 1995; Roupheal & Inglis 1995; Harriot *et al.*, 1997; Medio *et al.*, 1997; Shackley 1998; Hawkins *et al.*, 1999; Schleyer & Tomalin 2000; Tratalos & Austin 2001). In fact, some authors suggest that diving may reasonably be considered a consumptive activity (Shackley 1998; Shivilani & Suman 2000).

A significant amount of this damage has resulted from dive boat anchors being tossed directly onto the reef. The damage caused by careless anchoring has been of particular concern in the past, however, many dive tourism destinations are reducing such impacts using mooring buoys (e.g. Hawkins & Roberts 1992; Hale & Olsen 1993). The discharge of dive boat pollutants such as oil and gas residue, garbage, sewage, wash-water and food, onto the reef continue to be serious threats in many regions (e.g. CORAL 1995; Harriot *et al.*, 1997). Adding excess nutrients to the waters surrounding coral reefs can lead to eutrophication, and the resulting overgrowth of algae reduces growth rates and can lead to species mortality (Wilkinson 1992). The impacts of sunscreens and insect repellents on the reef are not yet clearly understood (Talge 1992).

Divers contribute to reef degradation directly through their underwater actions and behaviors. Salm & Clarke reported in 1989 that “almost all diving results in minor, unintentional damage to coral reefs and other biota. At frequently dived sites, this damage can become significant and can lead to local loss of fragile species” (p. 103). More recently, numerous researchers have investigated the impact of diving on reefs throughout the world. Diving was determined to be the major direct cause of reef degradation in the Caribbean’s Bonaire Marine Park (Dixon *et al.*, 1993), and dive sites in Egypt and the West Indies Cayman Islands were more damaged than nearby sites where no diving occurred (Hawkins & Roberts 1992; Tratalos & Austin 2001). Research undertaken in the Virgin Islands National Park found that much of the damage done by divers was unintentional, and most people were unaware of the impact that their actions had on the reef (Marion & Rogers 1994). Similar work in Australia concluded that a lack of ‘environmental awareness’ by divers contributes to a greater number of impacts on the reef environment (Roupheal & Inglis 1995).

In a variety of locations, researchers have observed that divers can negatively impact reef ecosystems in a variety of ways. Divers cause damage by direct contact with the reefs, including kicking, trampling, holding-on-to, standing or kneeling on the coral, and also by collecting coral and other species for souvenirs. Loose dive gear can damage coral if it is allowed to drag over the reef surface. Through improper finning, divers stir up substrate that can negatively impact the sensitive reef flora and fauna (Salm & Clarke 1982; Tilmant 1987; Hawkins & Roberts 1992; Marion & Rogers 1994; Ecosystem Society 1995; Tratalos & Austin 2001). Researchers in the Bonaire Marine Park learned that divers affected the coral without physically contacting them. Their mere presence increased the level of stress on the coral, which made them more susceptible to disease that was ultimately fatal (Hawkins *et al.*, 1999).

Several studies have concluded that individual divers do not all impose the same degree of stress on the reefs. All studies on diver impacts found that while the majority of divers cause very little damage, a small minority are extremely destructive (Talge 1992; Dixon *et al.*, 1993; Davis *et al.*, 1995; Roberts and Harriot 1995; Davis *et al.*, 1996; Medio *et al.*, 1997; Schleyer & Tomalin 2000). For example, Roupheal & Inglis (1995) reported that four percent of divers caused seventy percent of reef damage. Some of the worst offenders are commonly reported to be underwater photographers keen to obtain the perfect photo. In one study, divers using cameras accounted for twenty-six percent of the sample, yet were responsible for seventy-two percent of all contacts made with the reef (Dixon *et al.*, 1994). Recognizing these findings, managers at the Bonaire Marine Park restricted divers with cameras from a popular dive site. This management attempt failed, however, because the dive operators found that too many divers carried cameras to make the policy operable in practice (Hawkins & Roberts 1997).

It is a common perception that experienced divers who have better buoyancy control and greater knowledge of 'reef etiquette' impose much less stress on marine ecosystems than do novices. At a study of divers in Australia's Julian Rocks Aquatic Reserve, the number of contacts made with the reef by divers decreased as the amount of diving experience and the level of diver training increased (Harriot *et al.*, 1997). However, such results were not obtained when the researchers repeated the study on divers in the Great Barrier Reef Marine Park. Here, while the inexperienced divers clearly had less buoyancy and finning control, they were more cautious about approaching the reef, preferring to view the flora and fauna from a distance. Experienced divers, however, spent more time exploring the reef at close range, resulting in a higher number of contacts (Harriot *et al.*, 1997). Thus, because individual dive schools vary in their standards of teaching; because acceptable underwater behavior varies regionally; and because individual dive

briefings highlight different aspects of the experience, the level of dive certification does not provide a clear reflection of a diver's competence.

While there is a large degree of variation in the magnitude of the impacts caused by different divers, overall, individual divers cause relatively little damage. However, the cumulative effects of large numbers of divers can be significant, and can have long term consequences (e.g. see Salm & Clarke 1982; Tilmant 1987; Marion & Rogers 1994; Davis *et al.*, 1996 etc.). Tilmant (1987) found that as the number of divers in an area increased, a greater degree of damage occurred in Florida reefs. Marion and Rogers (1994) reported that high levels of visitation to coral reefs posed a significant threat to their long term health and preservation in the US Virgin Islands. Hawkins and Roberts (1997) suggested that reef damage occurs at exponentially increasing rates as the level of diving intensity increases, while Tratalos and Austin (2001) concluded that diving has had significant impacts on heavily used dive sites in the Cayman Islands. These authors noted a reduction in coral cover and an increased amount of dead coral as the level of visitation by divers increased.

Given that diving is a sport that is intricately linked to the condition of the marine environment, the impacts of diving must be kept below damaging levels to maintain biodiversity and to ensure the long term viability of dive tourism operations. Some researchers have found that localized overuse at the dive sites is often observed before large scale, irreversible degradation begins (e.g. Dixon *et al.*, 1993). This can serve as an early warning system to managers, drawing attention to the fact that management actions and interventions are required. However, other researchers (e.g. Marion & Rogers 1994) have found that marine resource managers often lack training in the marine sciences, and are without scuba and snorkeling expertise. Such managers may fail observe the impacts of diving on the marine environment early enough, and may not fully comprehend their long-term effects on marine ecosystems. Thus, appropriate management actions may not be undertaken in time to prevent irreparable reef damage from occurring.

To ensure that the impacts of diving on reef environments do not reach unacceptable levels, researchers have applied the carrying capacity concept to the study of dive tourism (e.g. see Hawkins & Roberts 1992; Dixon *et al.*, 1993; Hawkins & Roberts 1993; Roberts & Harriot 1995; Davis *et al.*, 1996). These studies suggest that dive sites can tolerate a certain level of recreational use, but caution that the carrying capacity of dive sites is not limitless.

Dixon (*et al.* 1993) set out to determine what degree of diver induced damage was acceptable in the Bonaire Marine Park, using interviews with divers and data on coral cover and species diversity. Their analysis indicated a 'critical level of visitation' above which impacts

became evident. They determined the carrying capacity for this site to be between 4000-6000 dives per year, beyond which biological impacts might be severe and irreversible. They found that visitation to some sites had already exceeded the carrying capacity, which led to significant amenity value losses among divers.

The carrying capacity concept has been applied to several other dive tourism destinations with somewhat inconsistent results. A diving intensity of seven thousand dives per year was considered acceptable and sustainable for South African dive sites that were not vulnerable to damage (Schleyer & Tomalin 2000). Despite an increase in reef damage as visitation increased, dive sites in Egypt were found able to sustain more than ten thousand dives per year without 'serious' degradation (Hawkins & Roberts 1992). The critical level of visitation was set at twenty thousand dives per year for dive sites in Australia (Harriot *et al.*, 1997), where researchers recognized that the carrying capacity of individual sites depends on a balance between the impacts causing the degradation, the capacity of the environment to regenerate and the satisfaction levels of the divers.

Review of the dive tourism literature has shown that many of the impacts of diving are site specific, and depend on the characteristics of the individual site, the intensity of use, and the type of management system in place. For the carrying capacity approach to be an effective management tool, efforts must be undertaken to establish the effects of diving at different dive locations. The carrying capacity must then be determined on a site-specific basis. Such undertakings can be extremely costly, and both time and labor intensive. Consequently, Hawkins and Roberts (1992) and Shackley (1998) suggest that when in doubt, a good 'rule of thumb' for dive site carrying capacity is five to six thousand dives per site per year. However, they suggest that this figure should be viewed as a flexible estimation. Managing the ecological impacts of diving requires more than control of the number of divers, and marine resource managers must also focus on reducing the rates at which damage occurs. The literature suggests that the carrying capacity of dive sites can be increased through appropriate, effective management techniques, as discussed below.

In the Saba Marine Park, researchers found decreasing amounts of reef damage despite dramatic increases in the use of sites by divers (Hawkins & Roberts 1992). These encouraging results were attributed to the diver education efforts undertaken by the park. In fact, many studies have concluded that improved environmental education programs can significantly mitigate the negative impacts of diving on the reef (e.g. see Marion & Rogers 1994; Davis & Tisdell 1995; Harriot *et al.*, 1995; Davis *et al.*, 1996; Hawkins 1996; Medio *et al.*, 1997; Roupheal & Inglis 1995, 1997). Medio (*et al.*, 1997) found conclusively that a short educational dive briefing on the

sensitivity of the marine flora and fauna increased the divers' environmental awareness, and encouraged them to avoid unnecessary contacts with the reef, thus dramatically reducing the frequency of diver damage. This and other studies show that the use of educational tools can influence diver behavior, particularly when detrimental behavior results from ignorance or carelessness (Marion and Rogers 1994).

Dive tourism destinations such as Australia's Great Barrier Reef, Egypt's Ras Mohammed Marine Park, the US Virgin Islands National Park, and the Florida Keys National Marine Sanctuary have initiated training programs for dive guides and instructors intended to improve the frequency and effectiveness with which environmental dive briefings are given to all dive groups (Marion & Rogers 1994; Medio *et al.*, 1997; Aiello 1998; Florida Keys National Marine Sanctuary 1999). Such programs train the tourism industry staff about the nature of the marine environment, and teach them activities that can increase the opportunities for their divers to appreciate and enjoy their reef experiences. The importance of public awareness and of active participation of those in the tourism industry has been acknowledged by many (e.g. Salm 1985; Tilmant 1987; Kenchington 1990; Aiello 1998; Shackley 1998), and as awareness of diver impacts increases, these programs are becoming more popular, particularly in marine protected areas. However, a questionnaire completed in 1995 found that less than twenty-five percent of marine parks and reserves have implemented diver education programs (Medio *et al.*, 1997). Information about similar programs taking place outside of marine parks and protected areas is difficult to obtain, and, it appears that such programs are dependent on the initiative of members of the dive industry, non-governmental organizations, or conservation-minded entrepreneurs. Alex Brylske, an American Ph.D. candidate recognized the need for such a program, and created a professional development seminar to train scuba instructors, dive masters and other dive tourism professionals in the ecology of coral reefs, acquaint them with important management issues and strategies, and provide practical guidance for teaching low impact dive techniques, while instilling an environmentally responsible ethic among divers and snorkellers (Brylske 2000: 1). He pilot-tested his program in several dive tourism destinations throughout the world. While his initial implementations were met with success, it is clear that additional efforts are required to ensure that such programs are consistently applied. In any case, the benefits of educational approaches should be considered in the formulation of reef management policies, as they are often more effective over the long term than are direct, regulatory and enforcement approaches to marine resource management (Marion & Rogers 1994; Schleyer & Tomalin 2000).

In addition to diver education programs, Dixon (*et al.*, 1993) suggest that the carrying capacity of dive sites can be increased by management efforts that include dive site rotation and

spacing out the divers. These measures will not necessarily increase the tolerance of the ecosystem to stress, but serve to distribute the impacts more evenly across the system. In contrast, other researchers suggest confining the divers to specific areas selected for their impact resistance and resilience, and subject to intensive management, to contain the detrimental effects and protect the more vulnerable areas from diving-related damage (Hawkins & Roberts 1993; Marion & Rogers 1994; Plathong *et al.*, 2000). While this approach may succeed in concentrating the damage in smaller areas, it will understandably place these locations under high levels of stress, while also potentially impacting on the wilderness atmosphere which is an important aspect of the experience for many divers (see chapter five). The level of crowding at many dive sites is reported to impact on the nature of the diver experience in a negative way (e.g. see Harriot *et al.*, 1995; Shackley 1998). Whether the management approach aims to spread divers out or confine them to a specific region of the reef, it is important that managers recognize both the environmental costs and the social congestion costs of their interventions.

There is some suggestion that even the most conscientious reef management may not be enough to maintain healthy and intact reef ecosystems. Hawkins (*et al.*, 1999) reported that diving was changing the character of reefs in the Bonaire Marine Park despite close management. They noted a shift in coral species composition rather than a loss of coral cover, with the number of branching coral increasing at the expense of the large, massive colonies, which were more sensitive to human presence. Despite these changes from the reef's original state, the marine environment was still satisfying to divers, who in all likelihood were not aware of the changes. The researchers advise that even low levels of controlled diving can have pronounced impacts on a reef, and suggest that conserving the biological character of reefs might require even tighter controls on diving intensity.

Somewhat contradictory results were obtained following a study on coral reefs in Egypt. Hawkins and Roberts (1992) found that dived areas in Egypt were more damaged than were sites where no diving occurred. The absolute level of damage at this location was relatively low, and was considered biologically unimportant. Aesthetically, however, the damage was significant. The heavily dived areas looked badly degraded compared to other sites, and were less appealing to divers, which is significant because a large share of the amenity values associated with diving relate to the wilderness experience and the aesthetic quality of the dive sites (Davis & Tisdell 1996). Thus, management of coral reefs for recreational diving may require more strict control than management based solely on biological criteria to ensure that a reduction in the amenity values do not exceed limits that are acceptable to divers. Research undertaken by Tratalos and Austin (2001) in the Cayman Islands concurred with this finding.

There has been much discussion in the literature (and in chapter five of this thesis) about what divers desire in a dive location. Features such as interesting marine flora and fauna, the variety and abundance of marine life, a wilderness experience, the presence of coral and geologic formations, special marine species such as sharks, good visibility and a general lack of crowding are all considered important aspects of the dive experience (Pendleton 1994; Davis *et al.*, 1996; Shackley 1998; Mundet & Ribera 2001). There is a clear link between environmental quality and reef tourism, and because divers respond directly to different levels of environmental quality, it is apparent that damage to a coral reef may significantly affect both its appeal to divers, and their satisfaction with their dive experience (e.g. see Pendleton 1994; Shackley 1998). The majority of the dive literature suggests that the presence of attractive underwater sites is crucial to divers. In a recent study, seventy-five percent of divers indicated that aesthetics was the most important factor in their choice of dive resort (Medio *et al.*, 1997). Pendleton (1994) showed that degradation of coral reefs results in a loss of satisfaction to divers, who will select a more expensive alternative destination, rather than experience a low level of satisfaction in degraded reefs. Thus, degraded reefs can result in a decrease in scuba-related expenditures and a direct loss to the local economy.

Some researchers do not agree with this finding. Tabata (1989) found that neither pristine conditions nor biological diversity are essential at dive sites if other attractions such as a wreck or tame fish are present. Hawkins and Roberts (1994) agree, and report that many divers simply seek destinations with warm, clear waters, regardless of what there is to see. They concluded that the attraction of the Red Sea for tourists was unlikely to diminish even if the degree of environmental degradation at the dive sites becomes unacceptable. They suggest that once the reefs become heavily degraded, the focus of tourism in the region would shift to beach based activities and the proportion of visitors who dive will simply be reduced. Duffus and Dearden's (1990) tourism life cycle theory (discussed in chapter seven) supports the findings of these diving related studies. They propose that initially, the visitors to an outdoor recreation site will be adventurous specialists who are attracted by the natural environment, however, as the popularity of the region grows, large numbers of unspecialized recreationists will visit. The resulting pressure on the destination's natural environment and social systems will change the visitor experience such that it is no longer satisfying to the more specialized recreationists. These visitors will inevitably venture elsewhere, leaving the destination to cater to less specialized individuals, who may have less specific expectations for environmental quality, and consequently, will still find the experience satisfying. While such a situation may not result in an overall loss of tourism revenue, it is undesirable from a conservation perspective, especially given

the global and local importance of coral reef ecosystems. In previous decades, when a dive destination became degraded, divers simply moved on to a new, pristine location. As time goes on, this scenario becomes more unrealistic. Even with the increased mobility of diver tourists, the number of dive destinations throughout the world is finite, and there is presently a shortage of new, pristine dive sites available to divers. Thus, it is increasingly important to protect the existing dive sites. Because diving has the potential to be a sustainable contributor to many coastal communities, effective management that sustains the marine environment over the long term is the desirable alternative.

9.2. Aggregate Results

Scuba diving has the potential to become a long-term tourist attraction and a sustainable contributor to the Phuket economy. However, to realize this potential, the adverse effects of diving and its infrastructure on the natural environment must be identified and effective management actions that sustain the resources on which diving relies must be implemented.

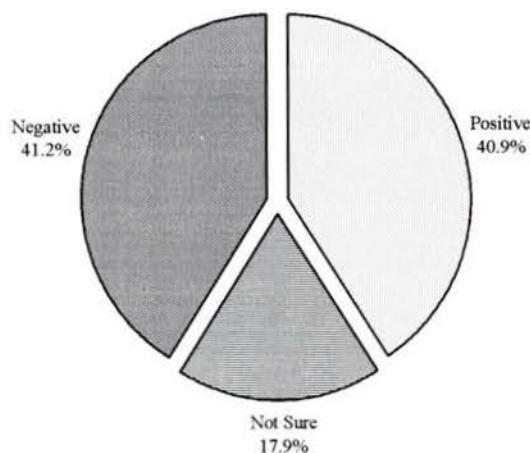
While numerous studies throughout the world have attempted to identify the actual impacts of diving on the reef environment, and the magnitude of such impacts (as reviewed in the previous section), this study sought to determine such impacts as perceived by divers. Based on a review of the relevant literature, as previously discussed, a list of the potential impacts of diving was developed. The harmful influences of diving on the reef include negative impacts on fish, coral and water quality; anchor damage, damage from garbage and waste, and the stress and injury caused by high intensity use and crowding at the dive sites. Not all of the impacts of diving are negative, however, and several positive impacts were identified. These include the prevention of fishing at the dive sites, the provision of an economic incentive for reef protection, and the provision of education to divers that creates interest in the marine environment, and ultimately, improved understanding of the need for marine conservation.

On both the pre and post trip surveys, divers were asked to indicate their perception of the overall impact of diving on the reef, on a five-point scale, where 1=very negative, 2=somewhat negative, 3=neutral / not sure, 4=somewhat positive, and 5=very positive. In some cases, the responses are reclassified into 'negative', 'neutral / not sure', or 'positive' for ease of explanation / comparison. Divers were also asked to indicate their feelings about the specific impacts individually. They were asked the degree to which they agree with the potential for each impact on a five-point scale, where 1=strongly disagree, 2=somewhat disagree, 3=neutral / not sure, 4=somewhat agree, and 5=strongly agree. In some cases, the responses are regrouped into 'disagree', 'neutral/not sure', and 'agree' to facilitate explanation and/or comparison of the data.

9.2.1. Pre-dive results

Results from the pre-dive survey indicate that the number of divers who perceived the overall impact of diving to be negative (41.2 percent) was almost the same as the number who perceived the impact to be positive (40.9 percent) (figure 9.1)¹. The remaining divers (17.9 percent) were unsure whether the impact of diving on the reef is positive or negative.

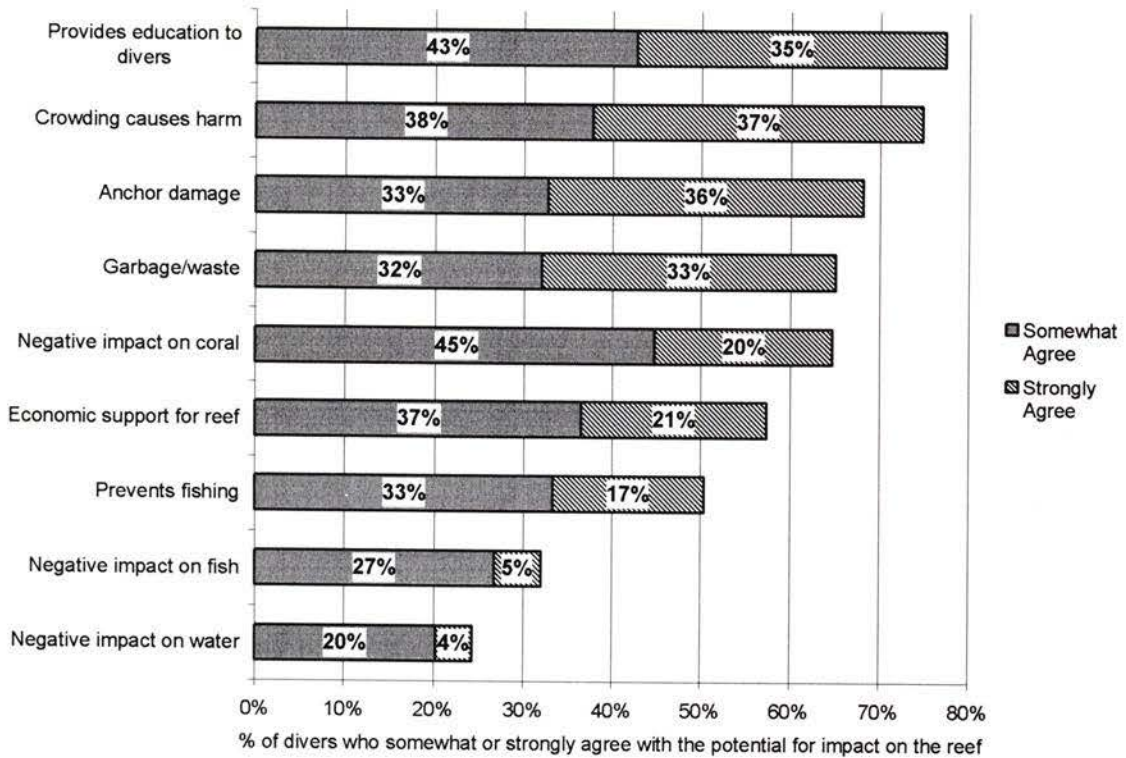
Figure 9.1. The Divers' Pre-Dive Perceptions Of The Overall Impact Of Diving On The Reef



With regard to the specific impacts, more than half of the divers agreed that diving negatively affects coral, and results in reef damage from anchors, garbage and overcrowding by divers (figure 9.2). Divers did not perceive all of the impacts of their sport to be negative, however, and a significant percentage of divers agreed that diving contributes to reef protection by educating divers, providing economic support for the reef, and preventing fishing. Less than one third of the divers surveyed felt that diving had a negative impact on the fish or the water quality at the dive sites.

¹ The divers' responses were grouped into negative, not sure or positive for ease of interpretation and comparison.

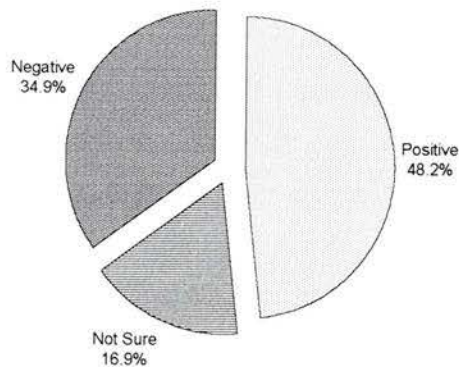
Figure 9.2. The Divers' Pre-Dive Perceptions Of The Specific Impacts Of Diving



9.2.2. Post-dive Results

Following the dive trip, significantly more divers perceived the impact of diving on the reef to be positive (48.2 percent) than negative (34.9 percent)². The remaining 16.9 percent of divers were unsure whether the impact of diving was positive or negative (figure 9.3).

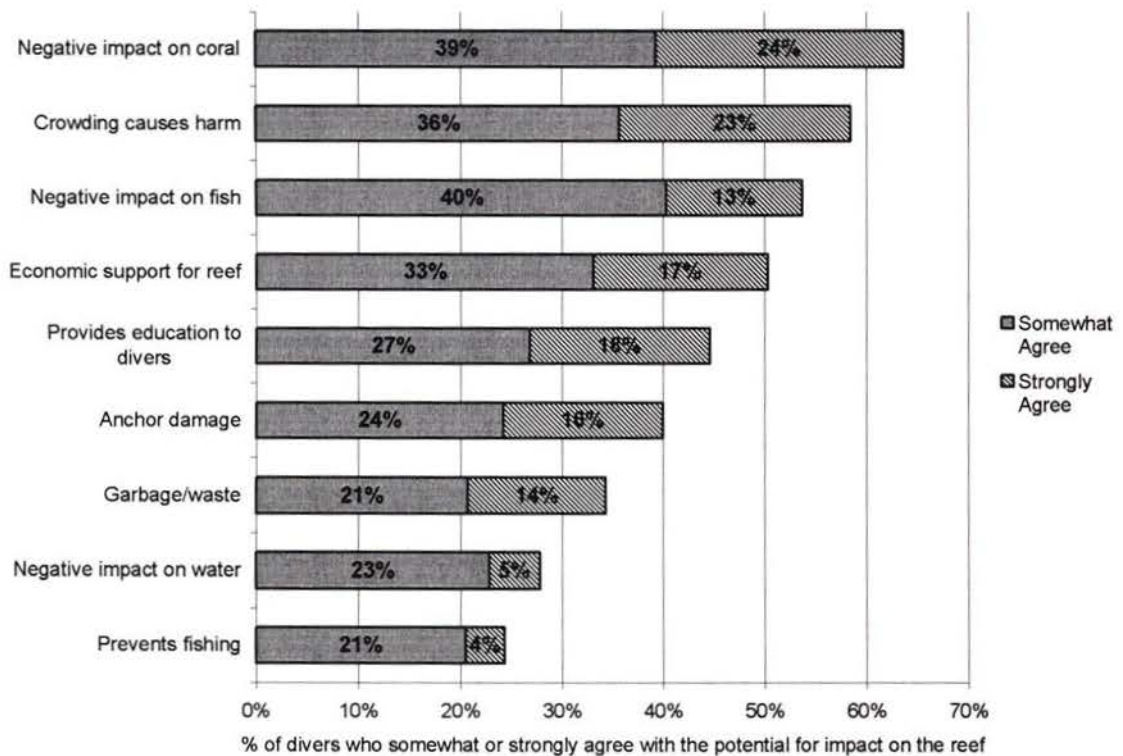
Figure 9.3. The Diver's Post-Dive Perceptions Of The Overall Impact Of Diving On The Reef



² The divers' responses were grouped into negative, not sure or positive for ease of interpretation and comparison.

Examination of the specific impact results shows that following their dive trip, more than half of divers agreed that diving benefits the reef by providing economic support for the reef and education to divers, while negatively affecting the reef by damaging coral and causing harm due to crowding at the dive sites (figure 9.4). Less than half of divers felt that diving negatively impacted the reef, fish or water quality through garbage or anchor damage. However, less than half of divers indicated that diving benefited the reef by preventing fishing at the dive sites.

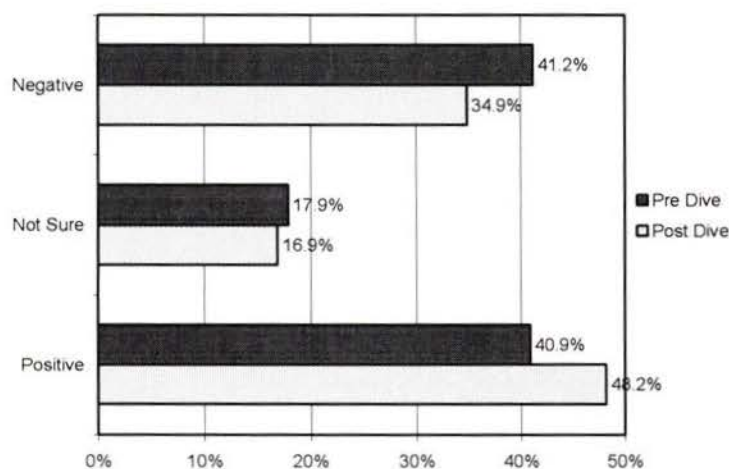
Figure 9.4. The Divers' Post-Dive Perceptions Of The Specific Impacts Of Diving



9.2.3. A Comparison Of Pre And Post Dive Results

To determine whether the diver's perception of the overall impact of diving changed over the course of the dive trip, a chi squared test was performed. Comparison of the pre and post survey results highlights a significant difference ($\chi^2 = 207.803$, $df=4$, $sig. = .000$). A paired sample t-test indicated a change in the mean response from the pre dive survey to the post dive survey (means of 3.06 and 3.25 respectively, $t = -3.801$, $df = 453$, 2-tailed $sig. = .000$). Following their dive trips, divers perceived the overall impact of diving on the reef to be more positive than they did prior to the trip (figure 9.5).

Figure 9.5. The Divers' Perception Of The Overall Impact Of Diving:
A Comparison Of Pre And Post Dive Results.



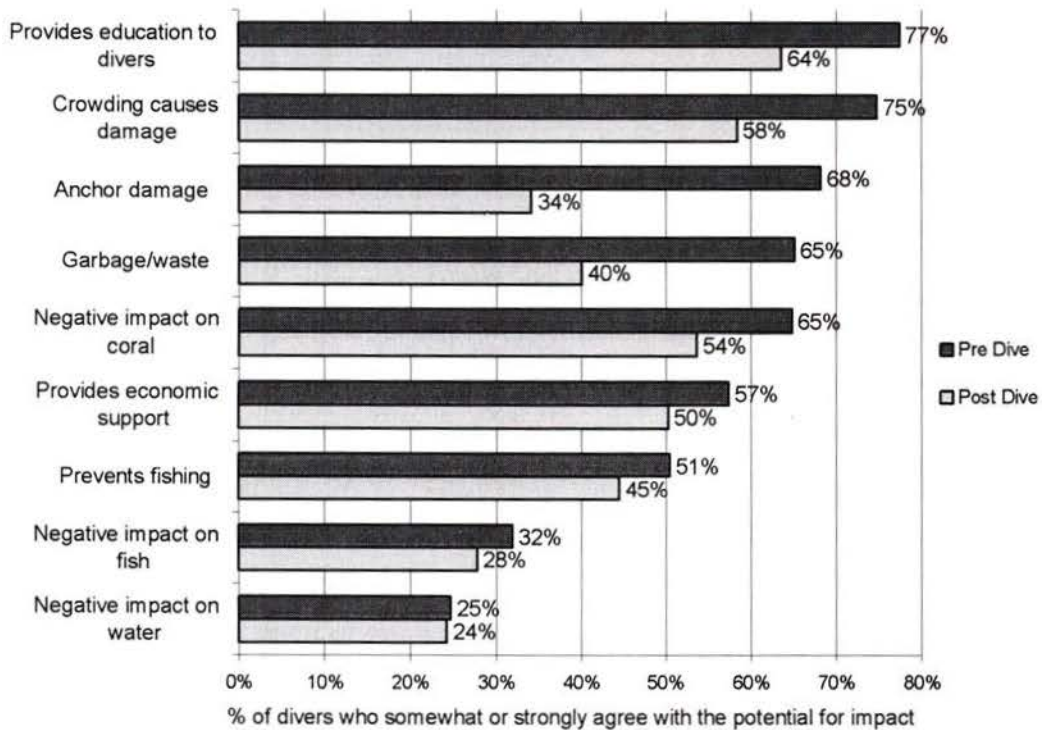
Comparison of the pre and post survey results illustrates significant differences in the distribution of diver responses for the specific impacts. Chi squared tests show that over the course of the dive trip, many divers changed their minds about the specific impacts of diving on the reef (table 9.1). Figures 9.6 and 9.7 illustrate visually the changes in diver perceptions that occurred over the course of the dive trip. For ease of illustration and comparison, the divers' responses on the 5-point scale are grouped into 'agree', 'not sure' and 'disagree'.

Table 9.1. Perceived Impacts Of Diving On The Marine Environment:
A Comparison Of Pre And Post Dive Results

Type of Impact		Response (%)			chi ²	df	prob.
		Disagree	Not Sure	Agree			
Negative impact on fish	Pre	37.7	30.4	31.9	111.743	4	.000
	Post	39.5	32.8	27.8			
Negative impact on coral	Pre	23.5	11.7	64.8	78.293	4	.000
	Post	26.2	20.1	53.7			
Negative impact on water	Pre	54.4	20.6	24.7	96.631	4	.000
	Post	42.4	33.3	24.3			
Provides economic support	Pre	14.0	28.5	57.4	88.335	4	.000
	Post	13.0	36.8	50.3			
Provides education to divers	Pre	7.2	15.3	77.4	52.31	4	.000
	Post	10.5	25.9	63.6			
Anchor damage	Pre	10.2	21.6	68.2	43.918	4	.000
	Post	31.5	34.2	34.2			
Garbage/waste	Pre	16.1	18.8	65.1	54.408	4	.000
	Post	32.8	27.1	40.1			
Crowding causes damage	Pre	10.3	14.9	74.8	27.468	4	.000
	Post	19.7	21.9	58.4			
Prevents fishing	Pre	17.9	31.6	50.5	54.174	4	.000
	Post	14.7	40.8	44.5			

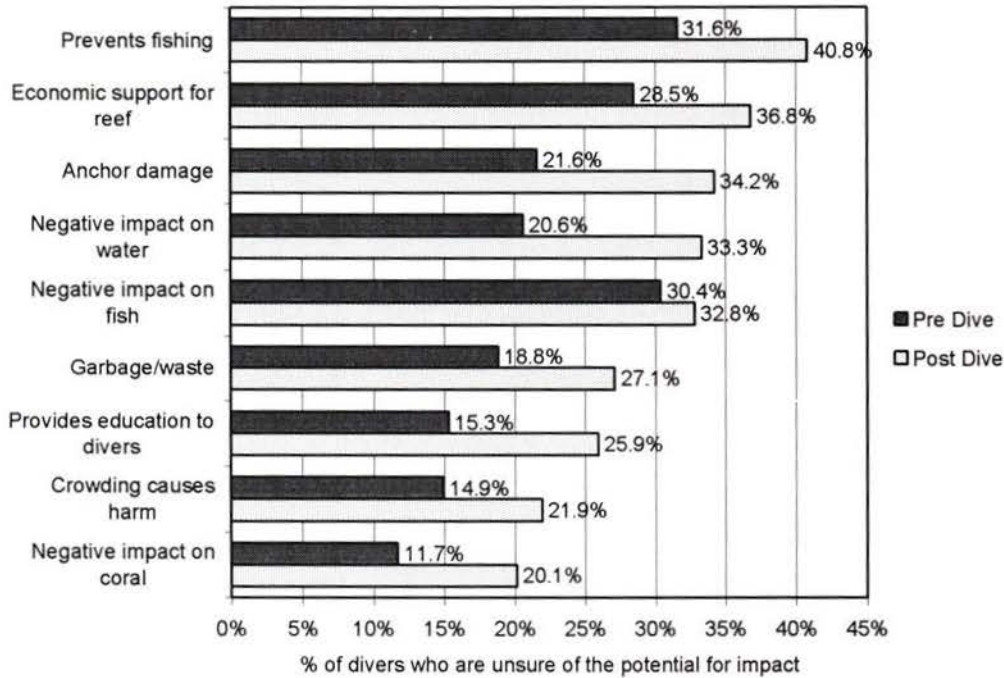
Figure 9.6 shows that following their dive trips, divers were less likely to agree with the potential for each of the impacts on the reef than they were beforehand. This means that while divers were less likely to agree with the potential for several negative impacts as a result of diving, they were also less likely to agree with the potential for positive impacts as well. Specifically, divers were less likely to agree that diving harms the marine environment by affecting coral and causing damage by anchors, garbage and overcrowding following their dive trip than they were before. Divers were also less likely to agree that diving helped to protect the reef by providing education to divers following their dive trip than before.

Figure 9.6. The Percent Of Divers Who Somewhat Or Strongly Agree With The Potential For Impact On The Reef: A Comparison Of Pre And Post Dive Results



In addition to the change over time in the 'agree' category, of particular interest is the change in the 'not sure' category. The number of divers who indicated they were unsure about the individual impacts on the reef increased from the pre dive survey to the post dive survey for each impact (figure 9.7). One possible explanation for these changes is that divers did not see evidence of anchor damage, garbage or damaged coral on their dive trip, and did not receive enough information from their dive master for their experience to be considered educational.

Figure 9.7. The Percent Of Divers Who Are Unsure Of The Impact Of Diving On The Reef: A Comparison Of Pre And Post Dive Results.



Comparison of the pre and post survey results suggests that the dive trip did influence how divers perceived the various impacts of diving on the reef. Following the trip, divers did not perceive the potentially harmful impacts of diving on the reef to be as negative as they did initially, however, they also did not recognize the potentially positive impacts to be as beneficial to the reef as they did before their trip. The dramatic increase in diver uncertainty regarding each impact strongly contributes to these results, and ultimately, it appears that divers were not certain how to interpret what they experienced on their trip.

That many divers experienced something on their dive trip that made them less likely to agree with the potential for several negative impacts on the reef could be interpreted as a positive sign. Perhaps divers did not see evidence of anchor damage, coral damage, garbage nor negative impacts resulting from crowding at the dive sites. However, many dive companies purposely avoid reefs where damage is evident, believing that divers will not be satisfied with such telling features. Thus, because they are directed towards the most pristine dive sites, which are not necessarily 'representative' of the area, it is possible that many divers do not witness the typical, (or average) amount of degradation. This could lead to the mis-estimation of the impact of diving on the reef. Moreover, that divers finished their trip less sure of the educational potential of diving than prior to their trip is of great concern. While marine environmental education should

be a crucial aspect of any scuba diving experience, it is especially important in coral reef regions due to the vulnerability of the environment. Whether motivated to participate in diving to learn about the marine environment or simply to be entertained, it is critical that all divers be provided with information that gives them at the very least basic knowledge about the coral reef environment, and a clear understanding of how their actions affect the marine flora and fauna. This, combined with consistent monitoring by dive staff is necessary to ensure that divers behave appropriately and do not cause unnecessary damage to the marine flora and fauna. If the Phuket dive tourism industry is to be sustainable, it is essential that environmental education is incorporated into the dive experience for every diver.

9.3. Disaggregate Results

To highlight differences in the responses of divers who took day trips and those who took liveboards, and between divers of different diver and ecotourist specialization groups, results are also provided in disaggregate form.

9.3.1. Diving Impacts and Trip Type

It was suggested in section 9.2 that the dive trip may have influenced how divers perceived the various impacts of diving on the reef. Because the environmental and social conditions both at the dive sites and throughout the entire diving experience differ dramatically between day and liveboard dive trips. The liveboard dive sites are often considered to be more 'pristine' and less crowded than the day trip sites. While liveboard trips provide divers with the opportunity to experience numerous sites in more remote locations over a period of several days, individuals who take day trips generally dive at one or two dive sites only. Thus, in terms of both management of the dive sites and management of the dive trips, it is important to determine the role that these circumstances could have on the change in diver perceptions. The objective of this section is to highlight areas of concern for day and liveboard trips independently, and determine whether different management actions are required at the different dive sites.

9.3.1.1. The Overall Impacts of Diving

Chi squared tests did not indicate a significant difference in the perception of impact between day trip and liveboard divers on the pre dive survey ($\chi^2=3.796$, $df=2$, $sig=.150$), indicating that divers on both trip types began their trips with similar beliefs and perceptions of the overall impact of diving on the reef (table 9.2). However, a significant difference was evident in the post dive survey results ($\chi^2=10.125$, $df=2$, $sig=.006$).

Table 9.2. The Overall Impact Of Diving: A Comparison Of Pre And Post Trip Results Between Day And Liveaboard Trip Divers

		Response (%)			chi ²	df	sig.
		Negative	Not Sure	Positive			
Pre Dive	Day Trip	41.3	21.6	37.1	3.796	2	.150
	Liveaboard	41.1	15.7	43.2			
Post Dive	Day Trip	41.5	18.4	40.1	10.125	2	.006
	Liveaboard	30.3	15.8	54.9			

Following the dive trip, liveaboard divers were more likely than day trip divers to perceive the overall impact of diving on the reef as positive, while day trip divers were more likely to perceive the impact as negative. While these differences could result from a combination of many variables, (such as the number of divers at the dive sites, the information provided by the dive staff, the number of dive sites visited and the divers' ability to differentiate between the different dive sites etc.), it seems likely that they are due, at least in part, to the environmental conditions at the dive sites. It is widely accepted that overall, the liveaboard sites are in more 'pristine' condition than are the day trip sites, some of which are quite degraded, and most of which are crowded³. Because the liveaboard divers experience generally better conditions at the dive sites, they may not encounter the extent of degradation that day trip divers do. Thus, they would likely view comparatively less evidence damage, and may consequently perceive the impact of the sport in a more positive light than do day trip divers.

9.3.1.2. The Specific Impacts of Diving

With regard to specific impacts that diving may have on the reef, results from the pre-dive survey did not indicate a significant difference between liveaboard and day trip divers. Essentially, day trip and liveaboard divers began their trips with similar opinions about each of the specific impacts listed. However, chi squared tests did highlight significant post-dive differences (table 9.3).

³ The degradation of the dive sites is not entirely caused by diving. Factors such as coastal development, extreme weather conditions and fishing likely contribute to the visible environmental damage. However, many divers may not recognize this. Observations of dive staff blaming all reef damage on members of the local fishing community also occurred on countless occasions.

Table 9.3. The Perceived Impacts of Diving: A Comparison Of Day and Liveboard Trips
Significant Post Dive Results Only

Post Trip Results	Response	Trip Type (% of respondents)		chi ²	d.f.	sig.
		Day Trip	Liveboard			
Economic support for the protection of the reef	Strongly or Somewhat Disagree	14.2	12.0	10.14	2	.006
	Not Sure	43.6	31.8			
	Somewhat or Strongly Agree	42.2	56.2			
Prevents fishing which helps protect the reef	Strongly or Somewhat Disagree	17.3	12.9	23.98	2	.000
	Not Sure	51.9	33.2			
	Somewhat or Strongly Agree	30.8	53.9			

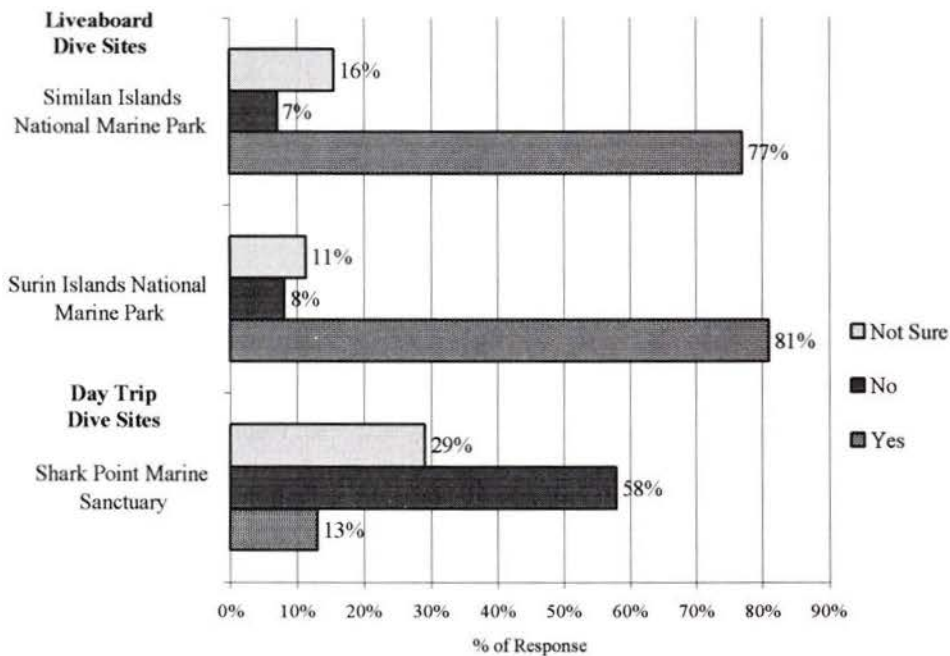
The results show that following the dive trips, divers on liveboard and day trips differed in their perceptions of the positive impacts of diving. Day trip divers were less likely than liveboard divers to agree that diving benefits the reef environment by preventing fishing or providing economic support for marine conservation. These results can be interpreted to indicate that day trip divers did not witness evidence of the proposed economic support for marine conservation, nor evidence that diving has halted fishing in the area to the degree that divers who took liveboard trips may have. This finding might also relate to the divers' awareness of the Marine Park status at many of the liveboard sites and the marine sanctuary status at two of the day trip sites. On the post-dive survey, divers were asked to indicate which sites they visited on their trip. Divers were also asked whether they had been diving in a marine park during their trip. The purpose of this question was to determine the divers' awareness of the protected area status of the sites they visited.

Overall, two hundred and eighty-six divers indicated they had visited a marine park on their trip. This number includes forty-five percent of all divers surveyed, and ninety-four percent of divers who took liveboard trips. Seventy-seven percent of the divers who visited the Similan Island dive sites were aware that they had been diving in a marine park, while more than eighty-one percent of divers who indicated visiting the Surin Island dive sites were aware of the marine park status (figure 9.8). The Thai Fisheries Department designated the Shark Point Marine Sanctuary in 1992, and while not an actual Marine National Park, this region does have some degree of protected area status (although there is some controversy surrounding the degree of protection). The sanctuary zone includes two of the most popular day trip dive sites, Shark Point and Anemone Reef. The majority of the divers who visited these sites were unaware of the regions' marine sanctuary designation. More than fifty-eight percent of divers indicated that they did not dive in a marine park on their dive trip, while twenty-four percent were unsure. Only thirteen percent of those who dived in the Shark Point Marine Sanctuary were aware that they had visited a marine protected area. Ultimately, these results illustrate the need for increased

awareness and efforts on the part of the dive staff to bring this important information to the attention of the dive tourists.

From these results, it seems that the divers' awareness of the protected area status of the dive sites, combined with the actual environmental conditions at the sites, might influence their perception of positive impacts. To some divers, the 'marine park' designation alone may imply that conservation initiatives are being undertaken. More research in this area is clearly required before any conclusions can be drawn.

Figure 9.8. Divers' Awareness Of Having Dived In A Marine Protected Area



9.3.2. Diving Impacts and Specialization

Section 9.3.1 highlighted differences between day trip and liveaboard divers regarding their perception of impacts on their dive trip. However, it is understood that not all divers taking a particular type of trip will have the same diving experience, expertise, and personal preferences. Thus, it is possible that certain factors, in addition to the conditions on the dive trip, could influence the divers' perception of impacts, as well as the changes in perception that occur over the course of the dive trip. Thus, it is important to determine whether attitudes toward the impacts of diving vary with specialization. Specifically, the objectives of this section are to determine whether a difference in the perception of impacts exists between divers of different specialization levels, and to learn if divers in each specialization group are likely to experience a change in opinion over the course of their dive trip.

The results are assessed for both diver specialization and ecotourist specialization. Divers are stratified according to their level of specialization, and the potential impacts of diving on the reef are compared for both the pre and post trip surveys.

9.3.2.1. Diver Specialization

The diver specialization framework places divers into more uniform subgroups based on their previous diving experiences and participation in the sport. Because previous results (chapter seven) indicated that divers are not a homogeneous group sharing the same attitudes, expectations or satisfactions, the relationship between diver specialization and the perception of impacts is examined.

9.3.2.1.1. The Overall Impact of Diving

To determine whether the level of diver specialization influenced the divers' perceptions of the overall impact of diving, a chi squared test was applied (table 9.4). The results indicate that prior to the dive trip, less specialized divers are more likely to be unsure of the impact, while medium and highly specialized divers are more likely to perceive the impact to be positive ($\chi^2=11.203$, $df=4$, $prob.=.024$). Following the dive trip, there was no significant difference between the three groups ($\chi^2=.780$, $df=4$, $prob.=.941$).

Table 9.4. The Perception Of The Overall Impact Of Diving On The Reef:
A Comparison Of Diver Specialization Groups

Overall Impact of Diving		Level of Diver Specialization			Chi ²	df	prob.
		Low	Medium	High			
Pre Trip	Negative	42.8	41.0	44.0	11.203	4	.024
	Not Sure	24.1	15.7	11.3			
	Positive	33.1	43.4	44.7			
	Total	100%	100%	100%			
Post Trip	Negative	34.8	35.5	31.7	.780	4	.941
	Not Sure	15.9	18.1	18.3			
	Positive	49.3	46.5	50.0			
	Total	100%	100%	100%			

9.3.2.1.2. The Specific Impacts of Diving

With regard to specific impacts, chi squared tests were applied to determine whether the level of specialization influenced the divers' perceptions. If the level of specialization did not influence the divers' perceptions to some degree, no significant difference between the specialization groups would be evident.

As illustrated in table 9.5, differences occur in the pre-dive survey results, indicating that the perception of some of the impacts of diving is related to the level of diver specialization. Unspecialized divers are more likely than medium or highly specialized divers to indicate that diving has a negative impact on water quality, but are less likely to agree that diving results in anchor damage. No significant differences between specialization groups were found on the post dive survey results, perhaps because the divers did not view such impacts during their trip.

Table 9.5. The Perception Of Specific Impacts On The Reef:
A Comparison Of Diver Specialization Groups

Potential Impacts of Diving	% of Each Specialization Group Who 'Somewhat or Strongly Agrees'			chi ²	df	sig.
	Low	Medium	High			
<u>Pre-Dive Results</u>						
Impact on Fish	31.2	29.2	34.7	1.370	4	.849
Impact on Coral	67.4	62.7	63.6	4.009	4	.405
Impact on Water Quality	32.0	25.6	17.1	2.57	4	.014
Economic Support for Reef	54.9	62.9	61.0	5.383	4	.250
Educates divers	75.1	79.0	78.4	1.416	4	.841
Anchor damage	61.8	70.5	71.5	0.71	4	.030
Garbage/Waste	65.3	66.7	64.4	1.191	4	.880
Crowding	71.1	74.4	79.5	6.135	4	.189
Prevents Fishing	42.6	52.6	56.6	7.285	4	.122
<u>Post-Dive Results</u>						
Impact on Fish	34.8	25.2	27.2	6.456	4	.168
Impact on Coral	53.9	55.5	55.2	1.408	4	.843
Impact on Water Quality	27.7	28.4	20.8	4.828	4	.305
Economic Support for Reef	54.6	48.7	46.7	6.520	4	.164
Educates divers	68.1	66.9	56.0	7.890	4	.096
Anchor damage	37.6	32.3	30.4	8.113	4	.088
Garbage/Waste	44.0	45.8	34.1	4.476	4	.345
Crowding	61.0	56.1	56.3	.880	4	.927
Prevents Fishing	46.3	44.2	45.5	.380	4	.984

While individual analyses of the pre and post data highlight several issues, such analyses do not tell the whole story. Because the differences found in the post dive results were not evident in the pre-dive results, it is appropriate to question whether something about the actual dive experience influenced the change in opinion among divers of different specialization levels. To determine whether the mean response changed over the course of the dive trip, paired sample t-tests were performed for each specialization group. Table 9.6 indicates where significant changes in the pre and post dive responses were found.

Table 9.6. Diver Specialization And Changes In The Perception Of Impacts On The Reef: A Comparison Of Diver Specialization Groups.

	Level of Diver Specialization		
	Low	Medium	High
Negative impact on fish			X
Negative impact on coral			X
Negative impact on water quality		X	X
Provides economic support		X	
Provides education		X	X
Anchor damage	X	X	X
Garbage/waste	X	X	X
Crowding causes harm		X	X
Prevents fishing			

X indicates where changes in the perception of impacts exist between the pre and post dive surveys

As is evident in table 9.6, divers are more likely to experience attitude changes over the course of their dive trip as their level of specialization increases. Low specialists experience changes in their perception of the impact caused by anchor damage and garbage. High specialists, however, experience changes in their perception of most of the impacts listed. Further analysis indicates that differences do exist between divers of similar specialization levels on day and liveaboard trips (table 9.7). The specific areas where change occurs are somewhat different between the trip types, suggesting that it is a combination of specialization level and the type of experience provided on the dive trip that influences such opinion changes.

Table 9.7. Diver Specialization And Changes In The Perception Of Impacts On The Reef:
A Comparison Of Day and Liveboard Trips

	Level of Diver Specialization					
	Low		Medium		High	
	Day Trip	Liveboard	Day Trip	Liveboard	Day Trip	Liveboard
Negative impact on fish					X-	
Negative impact on coral						
Negative impact on water quality			X+			X+
Provides economic support			X-		X-	
Provides education			X-	X-	X-	X-
Anchor damage	X-	X-	X-	X-	X-	X-
Garbage/waste	X-		X-	X-		X-
Crowding causes harm			X-	X-	X-	X-
Prevents fishing						

*'X' indicates where changes in the mean perception of impacts exist between the pre and post dive surveys
'+' indicate an increase in the mean response from the pre to post survey, '-' indicates a mean decrease.

The purpose of this section was to investigate the relationship between the level of diver specialization and the divers' perception of impacts on the reef, with a particular focus on the change in diver perceptions over the course of the trip. Prior to the dive trip, some differences between low, medium and highly specialized divers were evident. Following the trip, differences in the perception of both the overall impact and the specific impacts of diving were not found for the overall sample. When classified by trip type, however, it was evident that highly specialized divers who took day trips were less likely to agree that diving benefits the reef by providing economic support and education to divers. In addition to the variation between groups, numerous differences within each of the diver specialist groups were identified. Divers were more likely to undergo opinion changes over the course of the dive trip as the level of diver specialization increased.

9.3.2.2. Ecotourist Specialization

The ecotourist specialization framework places divers into more uniform subgroups based on their environmental attitudes and the value they place on conservation related features. Because chapters seven and eight showed that divers are not a homogeneous group in terms of their expectations or satisfactions, it is necessary to investigate the relationship between ecotourist specialization and the divers' perception of impacts on the reef.

9.3.2.2.1. Overall Impact of Diving

An investigation into the relationship between the perception of impacts and the level of ecotourist specialization was also undertaken. To determine whether the level of ecotourist

specialization influenced the divers' perceptions of the overall impact of diving, chi squared tests were applied. Examination of the pre and post trip results indicates no significant difference between ecotourist specialization groups for either trip type (table 9.8).

Table 9.8. The Perception Of The Overall Impact Of Diving On The Reef:
A Comparison Of Ecotourist Specialization Groups.

Overall Impact of Diving		Level of Ecotourist Specialization			Chi ²	df	prob.
		Low	Medium	High			
Pre Trip	Negative	39.3	45.6	42.2	3.373	4	.497
	Not Sure	39.7	39.5	41.3			
	Positive	21.0	14.9	16.5			
Total		100%	100%	100%			
Post Trip	Negative	31.1	36.7	35.2	4.927	4	.295
	Not Sure	53.3	42.2	44.3			
	Positive	15.6	21.1	20.5			
Total		100%	100%	100%			

9.3.2.2.2. The Specific Impacts of Diving

With regard to the specific impacts, analysis of variance tests were completed to identify differences between low, medium and highly specialized ecotourist groups. Significant results are presented in table 9.9.

Table 9.9. The Perception Of Impacts Of Diving On The Reef: Differences Between Low, Medium And Highly Specialized Ecotourists. Analysis Of Variance Results.

Overall Results		Specialization Group (mean)			d.f.	f.	prob.	Significant Difference?		
		Low (L)	Medium (M)	High (H)				L-M	M-H	L-H
Pre Dive	Provides economic support	3.54	3.59	3.85	529	3.551	.029			*
	Crowding	3.84	4.09	4.28	536	8.331	.000	*		*
Post Dive	Provides economic support	3.45	3.46	3.83	432	4.779	.009		*	*
	Provides education to divers	3.65	3.72	4.08	434	6.247	.002		*	*

Prior to the dive trip, unspecialized ecotourists were less likely than highly specialists to believe that diving provides economic support for reef conservation. Unspecialized ecotourists were also less likely than medium and high specialists to agree that crowding at the dive sites causes damage. Following the dive trip, highly specialized ecotourists were significantly more

likely than other ecotourists to believe diving benefits the reef by providing economic support and education to divers. While these results highlight differences between ecotourist specialist groups, they do not demonstrate the likelihood of members of each group to experience opinion changes over the course of the dive trip. This is an important consideration when determining the impact that the actual dive experience has on the opinions of the divers. To determine whether the mean response for each specific impact changed over the course of the dive trips, paired sample t-tests were performed for each specialization group. Table 9.10 summarizes the results of the t-tests for the overall sample.

Table 9.10. Ecotourist Specialization And Changes In The Perception Of Impacts On The Reef: A Comparison Between Ecotourist Specialization Groups.

	Level of Ecotourist Specialization		
	Low	Medium	High
Negative impact on fish		X	
Negative impact on coral	X	X	
Negative impact on water quality	X	X	
Provides economic support			
Provides education	X	X	
Anchor damage	X	X	X
Garbage/waste	X	X	X
Crowding causes harm	X	X	X
Prevents fishing			

X' indicates where changes in the perception of impacts exist between the pre and post dive surveys

Low and medium specialized ecotourists appear more likely to have experienced opinion changes over the course of the dive trip than did highly specialized ecotourists.

The objective of this section was to investigate the relationship between the level of ecotourist specialization and the divers' attitudes about the impact of diving on the reef. With regard to the overall impact of diving, a relationship with the level of ecotourist specialization was not evident for either the pre or post dive survey results. Differences between groups were highlighted for some of the specific impacts, however, and following the dive trip, highly specialized ecotourists were more likely than other ecotourists to agree that diving benefits the reef by providing economic support and education to divers. Within each group, changes over the course of the trip were identified, however, low and medium specialists were more likely to change their opinion regarding the specific impacts than were high specialists.

9.4. Evidence of Impacts

Previous analyses (9.3.1.) have suggested that divers who experience ‘less than pristine’ environmental conditions on their dive trips may be more aware of the potentially harmful impacts that diving can have on the reef. The objectives of this section are to determine whether a relationship exists between various diver characteristics and the likelihood of witnessing impacts by a member of one’s dive group, ascertain whether viewing negative impacts results in changes in opinion over the course of the dive trip, and determine the effect that personally viewing impacts has on the diver’s perceptions of their diving experience overall. The underlying goal of this section is to determine whether personally witnessing damage to the reef results in changes in diver awareness, and ultimately, diver behavior.

On the post dive survey, divers were asked to indicate whether they personally viewed any evidence of negative impacts on the reef created by members of their dive trip. Of the overall sample, 29.1 percent of divers indicated that they did view such impacts, while 70.9 percent did not. A chi squared test did not highlight a significant difference between day trip and liveaboard divers (table 9.11).

Table 9.11. Did Divers Witness Negative Impacts On The Reef Created By Members Of Their Dive Group? A Comparison Of Day Trip And Liveaboard Divers.

Did Divers Witness Impacts?	Total Sample		Day Trip		Liveaboard	
	%	(n)	%	(n)	%	(n)
No	70.9	(370)	69.7	(152)	71.7	(218)
Yes	29.1	(152)	30.3	(72)	28.3	(86)
Total	100%	n=522	100%	n=218	100%	n=305

$\chi^2=.243$, $df=1$, $sig=.622$

Chi squared tests were performed to determine whether the level of diver or ecotourist specialization are related to the likelihood of witnessing negative impacts on the reef by dive group members. A significant difference between individuals of different specialization levels was not found for either diver or ecotourist specialization framework (table 9.12).

Table 9.12. Did Divers View Negative Impacts On The Reef By Members Of Their Dive Group? A Comparison Of Diver and Ecotourist Specialization Groups.

Witness evidence of negative impacts?	Level of Diver Specialization (% response)		
	Low	Medium	High
No	73.0%	71.2%	66.4%
Yes	27.0%	28.8%	33.6%
Total	100.0%	100.0%	100.0%

$\chi^2=1.487$, $df=2$, $sig=.475$

Witness evidence of negative impacts?	Level of Ecotourist Specialization (% response)		
	Low	Medium	High
No	71.2%	71.1%	70.7%
Yes	28.8%	28.9%	29.3%
Total	100.0%	100.0%	100.0%

$\chi^2=.009$, $df=2$, $sig=.996$

To determine whether the act of personally viewing negative impacts to the reef influenced how divers felt about the overall impact of diving following their dive trips, chi squared tests compared the responses of divers who did witness impacts by a dive group member with those who did not. Analysis of the pre-dive survey results did not indicate a significant difference between the groups in terms of either the overall impact, or the specific impacts. Essentially, both groups of divers began their trips with similar perceptions of diving impacts. However, several significant differences were highlighted in the post dive results. Following their dive trips, individuals who did witness reef damage by a member of their dive group were more likely to feel that diving had a negative impact on the reef than divers who did not witness impacts (table 9.13).

Table 9.13. Divers' Perceptions Of The Impact Of Diving Following Their Trip: A Comparison Of Divers Who Did Witness Impacts On The Reef And Those Who Did Not.

Divers' Post Dive Perceptions of the Overall Impact of Diving	Witness Evidence of Impacts? Response (%)	
	No	Yes
Negative	31.5	43.4
Positive	52.1	39.5
Not Sure	16.4	17.1
Total	100%	100%

$\chi^2=7.892$, $df=2$, $sig=.019$

With regard to the specific impacts, several differences were highlighted between those who witnessed impacts, and those who did not (table 9.14). Divers who personally view impacts are more likely than other divers to agree that diving has a negative impact on fish and coral, and causes harm through garbage and crowding. They are also less likely to agree that diving benefits the reef by providing education to divers than those who did not personally see damage by a member of their dive group.

Table 9.14. The Specific Impacts Of Diving On The Reef: A Comparison Of Divers Who Did View Impacts By A Member Of Their Dive Group And Those Who Did Not.

Type of Impact	% Of Divers Who 'Somewhat Or Strongly Agree'		chi ²	d.f.	sig.
	Did Not View Impacts	Did View Impacts			
Negative impact on fish	23.5	38.2	13.090	2	.001
Negative impact on coral	47.4	69.7	24.706	2	.000
Provides education to divers	65.8	62.8	6.114	2	.047
Garbage/waste	37.0	48.0	6.281	2	.043
Crowding causes harm	55.2	67.1	6.473	2	.039

Because these differences were not evident in the pre-dive survey results, it is reasonable to question whether the change in the divers' opinions results from witnessing reef impacts and personally seeing the damage that diving can have on the marine environment.

To determine whether a relationship exists between witnessing reef impacts by a member of one's dive group and overall satisfaction, t-tests and chi squared tests were performed. No relationship between these variables was found. Whether divers would return to the area for future dive holidays can also be perceived as an indicator of satisfaction. Chapter six reported that almost seventy percent of survey respondents would return to Phuket in the future, while ninety percent would return to their chosen dive company. Chi squared tests illustrated that divers who did witness impacts by a member of their dive group were less likely to indicate they would return to Phuket than divers who did not (table 9.15). However, both groups were equally likely to indicate they would return to their dive company in the future.

Table 9.15. Will Divers Return To Phuket And Their Dive Company In The Future? A Comparison Of Divers Who Did Not View Impacts And Those Who Did.

Witness Impacts?(%)	Return to Phuket?			TOTAL
	No	Yes	Not Sure	
No	5.8	74.8	19.5	100%
Yes	12.5	61.2	26.3	100%

$\chi^2=11.476$, $df=2$, $sig.=.003$

Witness Impacts?(%)	Return to Dive Company?			TOTAL
	No	Yes	Not Sure	
No	2.2	90.4	7.4	100%
Yes	2.0	90.1	7.9	100%

$\chi^2=.065$, $df=2$, $sig.=.968$

9.5. Evidence of Impacts and Marine Conservation Efforts

The previous section discussed the idea that divers who witnessed negative impacts inflicted on the reef by members of their dive group became more aware of some marine conservation issues following their experience. Environmental education literature (e.g. Forestell 1993; Aiello 1998) suggests that an initial step towards the conservation of natural resources is raising awareness about the need for such conservation, and of the issues and challenges that must be overcome in the process.

On both the pre and post dive surveys, individuals were asked to indicate whether they would be interested in participating in a reef monitoring project (RMP) designed to maintain environmental quality and minimize negative visitor impacts at the dive sites, thus ultimately conserving the reef resources. Of the divers who completed the pre-dive survey, 60.6 percent indicated an interest in participating. Following the dive trip, this number increased to 68.3 percent.

The objective of this section is to explore the relationship between the divers' perception of negative impacts on the reef and the interest in participating in marine conservation projects. This analysis is based on the premise that the willingness to participate in marine conservation efforts is related to the divers' understanding of the need for such efforts. To this end, data analysis will examine:

- whether individuals interested in participating in marine conservation projects are more aware of the potential impacts of diving on the reef, and are therefore more observant of such impacts while diving; and, conversely

- whether the act of personally witnessing reef damage influenced those individuals not initially interested in marine conservation projects to become involved by raising their awareness of the need for such programs.

To determine whether divers who indicated an interest in the reef monitoring project on the pre-dive survey were more likely than other divers to witness negative impacts on the reef environment, a chi squared test was completed (table 9.16). The test showed that individuals who indicated an interest in the reef monitoring project on the pre dive survey were significantly more likely to witness evidence of impacts by members of their dive group ($\chi^2=6.842$, $df=2$, $sig=.033$). One third (33.2 percent) of these divers viewed members of their dive group causing damage to the reef, while one fifth (20.0 percent) of divers not interested in the conservation project witnessed damage.

Table 9.16. The Likelihood Of Witnessing Impacts By A Member Of One's Dive Group: A Comparison Of Divers Who Indicated Interest In Participating In A Reef Monitoring Project On The Pre-Dive Survey, And Those Who Were Not Interested, Or Unsure.

Pre-Dive Willingness to Participate in a Reef Monitoring Project	Witness Evidence of Negative Impacts? (%)		
	No	Yes	TOTAL
No	80.0	20.0	100%
Yes	66.8	33.2	100%
Not Sure	76.4	23.6	100%

$\chi^2=6.842$ $df=2$ $sig=.033$

At this point, some interesting questions arise. Are divers who are willing to participate in reef monitoring projects more aware of the potentially negative impacts of diving on the reef than other divers? If so, are these individuals more observant of damaging behavior, both by themselves and others, while they are diving? There is clearly a need for more detailed and thorough research in this area.

While the analysis indicates a relationship between the divers' pre-dive interest in the reef monitoring project and the likelihood of viewing impacts, it is also important to examine whether a relationship exists between the actual perception of impacts during the dive trip and the post-dive interest in the marine conservation project. To determine whether divers who viewed impacts were more likely to indicate interest in a reef monitoring project following their dive trip than divers who did not view impacts, a chi squared test was completed (Table 9.17). The results indicate that individuals who witness negative impacts on the reef by a member of their dive

group are significantly more likely to be interested in the marine conservation projects than individuals who did not witness impacts ($\chi^2=44.415$, $df=1$, $sig.=.000$). Of the divers who did not witness impacts by a member of their group, fifty-nine percent were interested in participating in a reef monitoring project. However, almost ninety-one percent of divers who did view impacts expressed interest in the monitoring project. Thus, it appears that personally witnessing the impacts that diving can have on the reef does influence divers by making them more aware of the potential hazards to the reef, increasing their awareness of the need for marine conservation, and making them more willing to apply their new-found knowledge by participating in such conservation projects.

Table 9.17. Post Dive Willingness To Participate In A Reef Monitoring Project:
A Comparison Of Divers Who Did Witness Impacts And Those Who Did Not.

Witness Evidence of Negative Impacts?	Post-Dive Willingness to Participate in a Reef Monitoring Project (%)		
	No	Yes	TOTAL
No	40.7	59.3	100%
Yes	9.2	90.8	100%

$\chi^2=49.415$ $df=1$ $sig.=.000$

To further expand on the idea that simply being conscious of the potential impacts of diving may make divers more aware of the need for marine conservation, and more willing to participate in such efforts, the divers who were NOT interested in joining a reef monitoring project on the pre-dive survey were isolated. Based on the above findings, it is reasonable to hypothesize that of the divers NOT initially interested, those who witnessed impacts would be more likely to experience a change in willingness to participate over the course of the trip than those who did not view impacts to the reef by a member of their dive group. To determine if a difference between these groups exists, a chi squared test was performed (table 9.18).

Of the divers who did not show an interest in participating in a reef monitoring project on the pre-dive survey, those who witnessed negative impacts on their dive trip were more likely to indicate a willingness to participate on the post dive survey than those who did not view damage. Specifically, while only 16.7 percent of divers who did not view impacts changed their minds about participating in the reef monitoring project, 93.3 percent of divers who did witness reef damage expressed an interest in the conservation project. This supports the idea that personally seeing the impacts that diving can have causes divers to become more aware of marine environmental issues, and more willing to make a personal contribution to conservation endeavors.

Table 9.18. Of Divers NOT Initially Interested in Participating In A Reef Monitoring Project: Post Dive Willingness To Participate In A Reef Monitoring Project: A Comparison Of Divers Who Did Witness Impacts By A Member Of Their Dive Group And Those Who Did Not.

Witness evidence of negative impacts?	Post-Dive Willingness to Participate in a RMP (%)		TOTAL
	No	Yes	
No	83.3	16.7	100%
Yes	6.7	93.3	100%

$\chi^2=32.414$ df=1 sig=.000

These results suggest that divers who do not witness reef damage may be less aware of the potential impacts of diving, and subsequently, may also be less aware of the need for marine conservation programs and the value of reef monitoring efforts. Thus, these divers are less willing to participate in such projects. Overall, the findings clearly illustrate the potential contribution that environmental education programs can make to marine conservation efforts. The results support the dive tourism literature and suggest that on-boat education programs can play a large role in increasing the divers' awareness of appropriate dive etiquette as well as important conservation issues. The findings also suggest that dive operators can raise the divers' awareness and potentially generate interest and support for marine conservation efforts by pointing out human-induced reef damage to their customers, as discussed in chapters seven and eight.

9.6. Summary and Discussion

Diving has the potential to become a sustainable tourism industry in Phuket. To realize this potential, a healthy and attractive marine environment must be maintained, and thus, the negative impacts of diving must be identified and minimized. The objective of this chapter was to gain insight into the divers' perceptions about the impact of their sport on the marine environment, and to determine whether the actual dive experience influenced their opinions.

Divers perceived the overall impact of diving to be more positive following their dive trip than before. With regard to the specific impacts of diving on the reef, comparison of the pre and post dive survey results suggests that the dive trip did influence the divers' opinions. Following the trip, divers did not perceive the potentially harmful impacts of diving on the reef to be as negative as they did initially, however, they also did not recognize the potentially positive impacts to be as beneficial to the reef as they did before their trip. A significant increase in the

number of divers who were 'unsure' of the potential for each of the impacts strongly contributed to these results, and overall, the findings suggest that divers did not know how to interpret what they experienced on their dive trip.

Analyses were undertaken to highlight differences between day and liveaboard divers regarding the perception of impacts at the dive sites. This was done to identify changes that occurred over the course of the dive trip, and to determine whether such changes indicate the need for management objectives and actions that are trip type specific. Differences between divers on day and liveaboard trips were not identified in the pre-dive results, yet were evident following the dive trip. This suggests that the conditions on the trips and at the dive sites did, to some extent, influence the divers' views of the impacts of diving on the reef. While over the course of the dive trip, no change was evident for liveaboard divers, individuals on day trips were less certain about the economic support for marine conservation provided by diving following their trip than before. This finding is very revealing, as it could suggest that upon visiting the dive sites, the divers did not view evidence of marine conservation, and were not told of any such initiatives that support this beneficial spin-off of diving. Ultimately, these results suggest that the environmental conditions at the dive sites were not what they should have been if diving was actually providing economic support for marine conservation. This indicates that resource and dive industry managers need to take a close look at the environmental conditions at the day trip sites, the type of activities taking place at these sites, and at the various individuals and groups using the sites such as dive companies, other marine tourism initiatives, commercial and sport fishers.

Management actions notwithstanding, the 'National Marine Park' designation encompassing many of the liveaboard dive sites provides some evidence of the economic incentive for marine conservation to the divers. However, such support is not present at the day trip sites. While two of the day trip sites are located within the Shark Point Marine Sanctuary (as discussed in chapter two), the Fisheries Department designation is understood and acknowledged by only a very few members of the dive industry. Only thirteen percent of divers who visited the sanctuary were aware they had dived in a marine park. The sanctuary title does not appear to have any influence on the type of use or management in the region. Overall, there is little evidence of any type of resource management presence or action at the various day trip dive sites. While some of the more than eighty dive companies operating from Phuket are very conscientious in their reef-based activities, the sheer volume of traffic through these common resources makes managing and maintaining them somewhat of a logistical challenge. Clearly, a great deal of effort on the part of resource and dive industry managers, conservation groups and community

members is required to deal with the issues at hand. However, on the part of the marine tourism industry, simply promoting specific guidelines on the acceptable use of all day trip dive sites and raising awareness about the protected area status of the two dive sites would provide a strong foundation for future efforts, and would likely contribute to both the environmental and economic sustainability of the industry.

In terms of the issues relevant to both trip types, the results highlight the need for marine environmental education to become more of a priority on all dive trips leaving from Phuket. That visitors on both types of dive trips were less certain about the educative properties of diving following their trips than before is of great concern, particularly if the dive industry has any hope of becoming sustainable. Diver education programs must not only raise the diver's awareness of the underwater environment and the key conservation issues, but also must increase their understanding of the impacts they, and their sport, can have on the reef. Ultimately, education programs must influence the diver's attitudes, encourage appropriate, non-damaging behavior, and eventually, result in more careful and environmentally considerate divers.

The lack of detailed education programs precludes sustainability. Implementing such programs will indeed be a major undertaking, requiring the effort of all members of the Phuket dive industry, marine conservation groups and marine resource managers. Initially, steps must be taken by dive industry managers to ensure that the dive staff themselves are properly trained and educated, so that they can act as positive role models and effectively relay information to the cross cultural / lingual group of divers that flock to Phuket each year.

On going efforts are required at both day and liveboard dive sites to maintain environmental quality. While the day trip sites clearly require a great deal of management attention due to the volume of traffic and apparent resource degradation, many of the liveboard sites are also in need of management actions that contribute to and support their function as National Marine Parks. The crowding and environmental damage at the local dive sites is placing greater pressure on the liveboard sites, and some companies are beginning to offer day trips to the Similan Island dive sites via speedboats. This scenario is becoming more common, and will likely increase as the environmental and social conditions at the local dive sites become less desirable to divers. Thus, the management actions taken to decrease the degree of crowding and improve the environmental conditions at the day trip sites may ultimately influence the conditions at the liveboard sites as well.

To determine the role that diver specialization has on the divers' perception of impacts, the relationship between these two variables was examined. The results were broken down by trip type to determine the role that the dive site conditions played in the equation. The results

indicate that highly specialized divers on both day trips and liveboards were more likely to change their opinion of the impact of diving over the course of the Phuket experience than were less specialized divers.

However, over the course of the day trips, highly specialized divers recognized specific issues that do not appear to have been noticed by less specialized divers. Following the trips, specialized divers were significantly less likely to agree that diving benefits the reef environment by providing economic support for marine conservation and educating divers, than were less specialized divers. In fact, fifty percent of the highly specialized divers were unsure about the economic support provided by diving, and forty percent were unsure about the educational component of their Phuket dive experience. It seems possible that the experienced divers had more specific expectations of the economic support and educational features provided on dive trips, and the conditions they experienced at the dive sites did not provide sufficient evidence of such undertakings.

Interestingly, other analyses do not support this finding. Highly specialized divers on both trip types viewed the overall impact of diving on the reef more positively following their trip than before, an outcome that was not evident for low and medium specialized divers. Divers also became consistently less likely to agree with the potential for the specific negative impacts of diving as specialization increased. These findings are especially interesting considering that highly specialized divers are the least satisfied overall with their Phuket dive trip. It is suggested that while highly specialized divers may not have recognized the potential for positive impacts on the reef, they also did not believe the impacts of their Phuket dive trip to be inherently negative. The idea that high dive specialists perceive the overall impact of diving to be neither positive nor negative, but rather benign, requires further investigation, particularly in the context of diver satisfaction.

The relationship between the level of ecotourist specialization and the diver's attitudes about the impacts of diving on the reef was also investigated. While several interesting results were identified, perhaps the most significant finding is that some of the trends highlighted are not consistent with those identified in earlier analyses using the diver specialization framework.

This analysis suggests that of the three ecotourist specialization groups, the more highly specialized ecotourists are least likely to experience changes in their perception of the specific impacts over the course of the dive trip. Similar analyses completed using the diver specialization index produced opposite findings. It was suggested in section 9.3.2.1 that the more highly specialized divers become, the more likely they are to experience changes in their perception of impacts during their dive trip.

As the level of ecotourist specialization increases, so does the perception that diving benefited the marine environment by providing economic support for reef protection and educating divers. In contrast, as the level of diver specialization increases, individuals are less likely to believe in these positive impacts of diving. Whereas the diver specialization analyses suggest that highly specialized divers are more likely to be 'unsure' of the impacts of diving following their dive trips, highly specialized ecotourists are least likely to be uncertain about the impacts of their sport on the reef. While these results are opposite to the diver specialization results, they are consistent with the 'nature of the ecotourist' discussed in chapter seven. Because ecotourists are interested in marine conservation and the educational and learning aspects of the scuba diving experience, it is reasonable that they may perceive such features to be significant components of the experience for all divers. This scenario is desirable, however, these results indicated that it is not the case.

While the differences highlighted in the two specialization analyses are independently revealing, there appears to be much room for future research that integrates the two approaches.

Almost thirty percent of the divers surveyed in Phuket witnessed a member of their dive group causing negative impacts to the reef. The impacts noted by divers include damage caused by touching and kicking coral, shell and coral collecting, a variety of impacts caused by underwater photographers, divers harassing marine life, improper disposal of food and garbage, and fishing at the dive sites by members of the crew. When asked 'Did you see any evidence of negative impacts on the reef environment created by participants in your dive group?', divers commented:

"Slight coral damage caused by novice divers. There were not enough dive masters to watch over them."

"Feeding fish, food dumped overboard."

"Touching and collecting coral and shells."

"Bad buoyancy by underwater photographers caused damage to corals."

"Chasing and poking fish."

"Moving stones and disturbing fish."

"Divers standing on coral, kicking it with their fins and collecting shells."

"Divers wearing dive gloves were always touching the corals."

"People were touching the coral and hitting it with their fins while they were taking pictures."

"The current was strong. You had to hold onto the nearest formation. It was sometimes a coral and I did see that some was damaged."

"Some divers are just all over the corals like a bad rash."

Analysis examined how witnessing a member of one's dive group causing harm to the marine environment affects divers, particularly in terms of their perceptions and opinions. The results indicate that viewing such damage influences divers in a variety of ways.

Whether or not divers witnessed impacts by a group member appears to be related to the divers' opinions of various impacts of diving on the reef. Divers who did not personally view reef damage perceived diving in a more positive light than did divers who witnessed negative impacts. Following their dive trips, individuals who viewed impacts were more likely to agree with the potential for negative effects caused by diving, and more likely to disagree with the beneficial aspects of diving, such as education. Similarly, divers who did not witness negative impacts on the reef by a member of their dive group perceived the impact overall of diving to be more positive following their trip than before, however, there was no change in the perceptions of divers who did view impacts. Clearly, environmental education programs that raise the awareness of all divers, preferably before they even enter the water, are required. Several divers who viewed negative impacts commented on the importance of diver education to prevent such occurrences:

“The instructors should tell their clients more about how to control buoyancy to prevent damaging the coral.”

“Rules and information from the dive master is very important to keep people from damaging the reef.”

“I had hoped to see rules for the protection of the dive sites. We must all learn to dive in a way that does no harm and protects the environment.”

“More knowledge and information should be provided by the divemaster. For example, keep off the sea bed.”

“It is the responsibility of the dive master and instructor to make sure that divers do not cause harm to the reef. Some dive staff do not set a good example and harm the reef themselves. The rules of proper diving behavior should be enforced for all people who want to enter the water. If you don't want to follow the rules, then stay home.”

“More information from the dive master is needed to educate people about the delicate coral reef environments.”

“I noticed that many divers take souvenirs (live coral) from the reef. Education on the environment is obviously very poor here. More information from the dive masters is needed.”

“If any educational videos are available to teach divers about what they should not do underwater, they would be helpful. More education is needed to keep the reefs looking nice.”

One possible explanation for these results is that divers who do not witness damage may be less aware of the potential for harm that diving can have than are divers who actually see their peers inflicting the harm.

Witnessing impacts does not appear to influence diver satisfaction with the experience overall. Nonetheless, a relationship between these variables does seem to exist. When asked whether they would return to Phuket for diving in the future, individuals who witnessed impacts created by a member of their dive group were significantly less likely to indicate they would return than those who did not. Given this finding it is clearly in the best interest of all dive operators to ensure that their staff and guests are properly educated about coral reef characteristics and acceptable diving etiquette prior to diving. This is relevant not only from a conservation viewpoint, in that sustainability requires that reef damage be minimized, but also from a business perspective. While statistics on the frequency of return visitors have not been compiled, many dive operators commented on the importance of these customers to their business.

Damage to the marine environment aside, that divers witness negative impacts created by other divers may actually be beneficial when considered from a marine conservation perspective. The results can be interpreted to suggest that many divers need to be convinced of the harm that diving can potentially have on the marine environment before they actually consider the issues. If nothing else, observing damage to the marine flora and fauna appears to raise awareness of some of these issues among the divers who have the opportunity to experience them first hand.

The relationship between the willingness of divers to become involved in marine conservation efforts and their perception of impacts on the reef was also explored. The findings support the idea that willingness to participate in marine conservation programs is related to the understanding of the need for such programs.

The results suggest that individuals willing to become involved in reef conservation programs may have a heightened degree of awareness about the marine environment during their dive trips. Such divers are significantly more likely to witness impacts inflicted on the reef by a fellow diver. However, whether they were more aware of what constitutes appropriate, non damaging behavior, more observant of the actions of other divers, or a combination of both factors remains to be seen.

It appears that personally viewing the impacts that diving can have on the reef does indeed influence divers in several ways: by making them recognize the potential hazards to the reef; increasing their awareness of the need for conservation; making them more willing to participate in such conservation projects; and potentially, making them more aware of how their own actions can affect the reef in both positive and negative ways.

Ultimately the findings of this section suggest that the act of viewing negative reef impacts may actually benefit the marine conservation movement due to the influence such

experiences can have on raising diver awareness. This has extremely significant implications for resource and dive industry managers, as well as for the dive staff that deal most closely with the customers on the boats. With the ultimate goal of ensuring the sustainability of the Phuket dive industry, in large part through marine conservation efforts, such findings necessitate major changes in how the dive companies conduct their business. Rather than shying away from damaged dive sites, (as is common practice where the availability of other dive locations allows), dive managers should consider using such areas as educational tools to raise awareness of marine conservation issues, (including appropriate dive etiquette), and encourage positive action on the part of the divers.

The value of explaining the cause of reef degradation to divers is clearly underestimated throughout much of the Phuket diving community. (In fact, fieldwork illustrated that most dive staff prefer to steer their divers away from obviously damaged areas, and avoid the ensuing discussions altogether). Unmistakably, the use of education programs to raise the environmental awareness of the dive tourists, and ultimately, as resource management tools, must begin within the dive companies themselves. Broad-based marine environmental education campaigns that reach all levels of dive staff are required to ensure their ability to effectively present such information to the divers. This issue is revisited in the recommendation section of chapter ten.

Chapter 10. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

10.1. Introduction

With receipts totaling more than four hundred and seventy-five billion US dollars in 2000, tourism is considered the world's largest industry (World Tourism Organization, WTO 2001). Close to seven hundred million people traveled during 2000, with the greatest increase in tourism arrivals occurring in Eastern Asia and the Pacific (World Travel and Tourism Council, WTTC 1999). Marine tourism makes up a significant component of the global tourism industry and is reported to be growing more rapidly than any other tourism sector (Orams 1999). Recreational scuba diving is one branch of the marine tourism industry that is experiencing particularly rapid growth. There has been an enormous increase in the number of divers certified each year and an estimated fourteen million people dive annually (Shackley 1998). Much of this diving activity is concentrated in the world's coral reefs, many of which are located in tropical developing countries.

Coral reefs are very diverse and spectacular environments, and the well being of millions of people in coastal communities throughout the tropics is related to the condition of the reefs upon which they depend for both food and livelihoods (Kenchington 1994). In addition to providing shoreline protection, nutrient cycling and recreation opportunities, reefs provide up to twenty-five percent of all the fisheries harvested in developing countries, and are an integral part of the economy of many coastal communities (Serageldin 1997). Coral reefs are fragile environments that are susceptible to change and damage from a variety of sources. Some estimates suggest that at the current rate of destruction, up to seventy percent of the world's coral reefs face immediate threats that may kill them within the foreseeable future (CORAL 1995).

Scuba diving tourism is one way of facilitating coral reef protection, as it places economic value on the conservation and protection of the marine environment, and has the potential to be a sustainable form of economic activity. Diving has been praised for being a low impact activity that stimulates local economies and inspires governments to protect coral reefs. It is viewed as an alternative to more destructive and non-sustainable uses of the reef such as dynamite fishing and mining (Orams 1999). However, the rapid growth of recreational scuba diving over the past two decades and the subsequent concentration of divers in coral reef areas has raised questions about the ability of these environments to sustain the desired levels of social and biophysical quality for both the local communities and the dive tourists.

This study focuses on the sustainability of the dive tourism industry in Phuket, Thailand. Tourism in Thailand has been growing steadily since the 1980's, and tourism plays an important role in the growth of the Thai economy, providing the largest single source of foreign exchange (TAT 2001). Located in the Andaman Sea, Phuket is Thailand's leading coastal destination and the number of tourists visiting this island has tripled over the last decade. More than three and a half million people visited Phuket during 2001, and statistics compiled by the Thai Tourism Authority indicate that this number represents more than a quarter of all visitors to Thailand (TAT 2002).

The waters surrounding Phuket provide excellent conditions for coral growth and the reefs support a variety of activities. The coral reef habitat is locally important in terms of the economic benefits it supplies through traditional fisheries and tourism. Significant changes in reef use patterns have occurred over the last twenty years, with tourism based activities replacing the traditional fisheries as main patrons of the reef. The growth in the dive tourism industry in this area has been rapid, and diving has become a very popular activity among visitors. Less than fifteen years ago it was possible to spend a week sailing among the islands and never encounter another tourist vessel (Piprell 1997). In the mid-1990's, *Skin Diver*, a popular dive magazine, rated some of the area's dive sites, in the nearby Similan National Marine Park, among the world's best. The region has since become popular among divers who seek the opportunity to experience the beautiful underwater environment, and dive with whale sharks, *Rhiniodon typus*, the world's largest fish. The Phuket dive industry has expanded dramatically, and presently, more than eighty-five dive companies operate on the island. Financially, dive tourism is increasingly important the area. It is estimated that more than one-hundred thousand individuals travel to Phuket each year specifically for diving, contributing substantially to the Thai economy through expenditures for food, accommodation, transportation, entertainment and diving. Annual contributions to the local economy made by divers are estimated to be in excess of one hundred and fifty million US dollars.

Clearly, diving is a significant component of the local tourist economy, and the financial benefits reach far beyond the dive companies into the local community. It is also clear that diving is a sport dependent on the provision of a healthy and attractive marine environment (Hawkins *et al.*, 1999; Moscardo 1999; Pendleton 1994; Tabata 1992). As dive tourism in Phuket continues to expand each year, it becomes increasingly important to maintain a balance between the use and conservation of the resources upon which the dive industry ultimately depends. The maintenance

of the marine environment is a critical aspect in the sustainability of the dive industry, both in terms of attracting divers to the area, and satisfying them during their visit.

The sustainability of Phuket's dive tourism industry is reliant on the presence of an undamaged marine environment that is both appealing and satisfying to divers. As the number of divers in the area increases and the use of the dive sites intensifies, the potential for marine environmental degradation and conflict among users increases (Davis & Tisdell 1995; Inglis *et al.*, 1999). Many fear that the continued growth and use will conflict with the ecological features that attracted divers to Phuket in the first place, eventually making Phuket an undesirable location for dive tourists. The ultimate goal for resource and dive industry managers must be to protect the marine environment to ensure that Phuket can continue to attract and satisfy divers over the long term, and maintain the economic benefits provided to the local community by the dive industry.

The dive experience must be significantly satisfying to divers for the industry to be sustainable and continue making a positive contribution to the local economy. The objectives of this project were to identify the strengths and weaknesses of the Phuket dive experience, detect areas that did not meet the diver's expectations, and highlight the areas that may limit the sustainability of the industry, and are thus of particular concern to resource and dive industry managers. To achieve these objectives, it was necessary to develop a clear understanding of the relationship between the motivations, expectations and satisfactions of the tourists that travel to Phuket for diving. Data was collected using pre-trip and post-trip questionnaires administered to six hundred and thirty-two divers. The pre-trip questionnaire measured the divers' motivations for diving, the features they most value in a dive experience, their perceptions of the impact of diving on the reef, and also collected demographic information. The post-trip questionnaire measured the divers' satisfaction with their experience, and collected information on their perception of reef impacts caused by diving.

This chapter presents a summary of the major findings and conclusions. Recommendations that may contribute to the ongoing success of Phuket's dive tourism industry are then presented, followed by suggestions for future research.

10.2. Summary of Major Findings

The main findings of the thesis are:

- The dive tourism industry is financially important to the region, contributing an estimated one hundred and fifty million dollars to the Thai economy each year, directly and through spin-off effects of the diving industry.
- The divers visiting Phuket have typical demographic profiles for divers as discussed elsewhere in the literature (e.g. Skin Diver 1996; Davis *et al.*, 1996; Mundet & Ribera 2001).
- The features most valued by divers in Phuket relate to the marine environment. This supports previous studies conducted on scuba divers and dive tourism (e.g. Tabata 1992; Pendleton 1994; Davis *et al.*, 1996; Shackley 1998). Divers rated the variety and amount of marine life, the presence of clear, unpolluted, undamaged dive sites, good underwater visibility and large creatures such as whale sharks and manta rays among the 'most important' dive trip features.
- Overall, divers were satisfied with their Phuket diving experience, but the degree of satisfaction varies among dive trip features. For example:
 - Divers were generally satisfied with the dive trip service features, such as the food, accommodation, and presence of appropriate safety features on the boat, and the friendliness of the dive crew.
 - Many features related to the quality and condition of the marine environment, such as the presence of unpolluted, undamaged dive sites, good visibility, a wilderness / nature experience, the opportunity to view large marine life and the opportunity to learn about the marine environment, did not meet the divers' expectations.
- Divers are not a homogeneous group, and the degree of diver satisfaction varied. Variability in satisfaction was explained in part by the 'specialization' concept. Diver specialization considered the amount and type of diving experience that each individual had, while ecotourist specialization related more to the divers' environmental attitudes and the importance they placed on marine conservation.
 - Specialized divers were less satisfied with the Phuket dive experience than were unspecialized divers. This finding concurs with previous studies on specialization that suggest as individuals become more specialized, they develop more specific expectations and are more demanding of their recreation experience (e.g. Schreyer &

Lime 1984; Virden & Schreyer 1988; McFarlane *et al.*, 1998). Thus, it becomes increasingly difficult to satisfy the expectations of divers as they become more specialized.

- Specialized ecotourists were more satisfied with their dive trip experience overall than were unspecialized ecotourists. This result was somewhat surprising, given that a significant body of ecotourism literature suggests that highly specialized ecotourists are generally more demanding of environmental quality and a lack of crowding in their recreation activities than are other tourists (e.g. Crossley & Lee; Shackley 1996; Burton 1998). However, ecotourism literature also stresses the importance of learning opportunities to specialized ecotourists (e.g. Wight 1996; Chirgwin & Hughes 1997). Thus it is possible that to the highly specialized ecotourists in Phuket, the opportunity to fulfill learning objectives compensates for the potentially less than pristine marine environment.
- The divers' perception of the impact of diving on the reef changed over the course of the dive trip.
 - Divers perceived the overall impact of diving on the reef to be more positive following their dive trip than before.

With regard to the specific impacts of diving,

- Divers were less concerned about the negative impacts of diving (such as damage to coral and fish) following their dive trip than before.
- Divers were not as convinced of the desirable spin-off effects of diving (such as diver education and provision of economic support for reef conservation) after their trip than before.
- Overall, divers were more 'unsure' of the impacts of diving following their dive trip than before.
- Almost thirty percent of divers witnessed a member of their dive group causing damage to the reef.
- Divers who personally viewed reef damage were more likely than other divers to express willingness to become involved in marine conservation efforts.

10.3. Conclusions and Recommendations

The results of this study suggest that the Phuket dive tourism industry, should it continue as it exists today, is unsustainable. Diving does have the potential to become a long-term tourist attraction, a non-extractive use of the region's reefs, and a sustainable contributor to the Phuket economy. It also has the potential to provide a forum for environmental learning and raise awareness about important marine conservation issues. To realize this potential, the adverse effects of diving must be identified and both the dive industry and the marine resources must be managed to minimize impacts and maximize the beneficial spin-offs of diving, while providing enjoyable and satisfying experiences for the dive tourists on an on-going basis. This study suggests that under the current trajectory, the nature of diving and divers in the region will change over time. In the past many divers were attracted to Phuket due to its deserved reputation as one of the best sites in the world, with its beautiful coral reefs, abundance of large and small marine creatures and wilderness setting. Divers are still attracted by these features; however, the presence of divers is contributing to changes in the diving environment, both physical and social, which ultimately influences diver satisfaction. Evidence from this thesis shows that presently, more experienced divers are not as satisfied with the experience and are less likely to return. If the Phuket dive industry continues on its current path, Phuket will cease to attract experienced divers and will cater more to the less specialized, and less demanding beginning divers. The loss of the more experienced divers will be a significant blow to Phuket's wider tourism industry, as these individuals are more likely to travel to Phuket specifically for diving. They also spend more time in Thailand than other tourists, contribute significantly to the local economy during their stay and are more likely to return to Thailand on multiple occasions for diving.

If Phuket is to remain as an attractive destination for a broad range of divers, attention should be directed to the following recommendations.

1. **For diving to be a sustainable use of the coral reef resources surrounding Phuket, it is necessary to place greater emphasis on educational components of the dive trips.**

An important component of any marine ecotourism activity is the provision of environmental education to participants, and researchers stress that education should be one of the most important management tools for coral reef conservation (Orams & Hill 1998; Rodriguez-

Martinez & Ortiz 1999). Such education programs have been proven to increase divers' awareness of the marine environment and dramatically reduce the amount of reef damage they cause (e.g. Medio *et al.*, 1997; Brylske 2000). The results suggest that a large number of the Phuket divers did not receive adequate information on the reef environment, on the impacts that their actions could have, or on appropriate diving etiquette. The literature proposes that the willingness to modify behavior and the desire to participate in coral reef conservation efforts will be determined by the individual's understanding of the likely sources of human impact on the reef (Russell 1997). The finding that the divers who personally observed reef damage were more willing to participate in conservation projects than other divers supports this proposal. Overall, the implication is clear. For diving to be a sustainable use of the coral reef resources surrounding Phuket, it is necessary to increase the educative components of the dive trips. This will raise the divers' awareness of the impacts of diving and the related marine conservation issues, and encourage them to act appropriately so as to minimize their impact on the reef environment.

- All Phuket area dive operators should incorporate education programs specifically designed to promote environmentally responsible behavior into their dive trips, with the goal of minimizing the impacts of diving on the marine environment.

In addition to encouraging voluntary behavior changes and dramatically reducing the frequency of reef damage inflicted by divers, research suggests that these programs also enhance the enjoyment of visitors. Environmental education is generally considered the most effective method for managing visitor behavior in marine settings, especially given the challenges of implementing and enforcing regulatory measures. These challenges are very evident in Phuket, as many of the dive sites are not located in a marine protected area, and the majority of the sites are subject to open access. Clearly, detailed and consistently provided environmental education programs will play a large role in achieving a sustainable dive industry, and considered both a service to divers and a management strategy.

- The Phuket dive industry should initiate a training program for dive professionals designed to increase the frequency and effectiveness with which environmental briefings are given to all dive groups. This will require a great deal of organization, effort and cooperation within the diving community.

Fieldwork illustrated that most Phuket dive operators underestimated the value that divers put on education programs; and that a majority of the dive staff working in the region are presently not qualified to provide effective environmental education programs to the dive tourists. Many, in fact, also appeared unable to demonstrate appropriate role modeling. Throughout the world, the marine conservation literature recognizes that the development of effective staff training programs is an area that has been neglected in theory and in practice, which has led to a lack of qualified environmental / coral reef educators (e.g. Russell 1992; Topalain 1992; Forestell 1993; Weiler & Davis 1993; Aiello 1998; Kimmell 1999; Brylske 2000).

The implementation of effective staff training programs in Phuket appears to have been constrained by the lack of appropriate infrastructure and insufficient funds within the dive industry. Until the formation of the Dive Operators Club of Thailand (DOCT), the Phuket dive community lacked an 'appropriate'¹ individual or group willing to take on the 'leadership role' required to develop and implement industry-wide comprehensive conservation efforts. Fieldwork illustrated that the majority of dive operators are willing to contribute to marine conservation efforts in a variety of ways, yet lack the initiative and ability to undertake such projects on their own. Clearly both an organizing body and the allocation of additional resources are required to ensure the development and success of environmental education efforts.

A 'Marine Environmental Education Fund' should be created by the Phuket dive industry for the purpose of financing the development and implementation of environmental education seminars for dive professionals. These seminars should be mandatory for all Phuket area dive masters and instructors, and should be required as a condition of employment. This fund should be administered through the DOCT, in conjunction with coral reef NGOs or an independent contractor hired for the purpose of creating and implementing the education program.

2. Improved site management, dive industry management and visitor management is required to maintain the environmental quality at the dive sites.

Many of the Phuket area dive sites were rated among the world's best less than a decade ago, however, the results indicate that several aspects of the diving environment were not

¹ Various individuals were ready, willing and able to take on the responsibility for various marine conservation initiatives, however, dive industry politics prevented the success of such efforts.

sufficiently satisfying to divers. This suggests that the dive sites have experienced some degree of degradation as the popularity of dive tourism in this region has increased in recent years. While much of this degradation can likely be attributed to other sources (such as coastal development and careless fishing techniques), the dive tourism literature suggests that as the number of divers in an area increases, the dive sites will experience corresponding degradation. The diving community can play an important role in maintaining environmental quality at the dive sites by reducing the impact of the actual dive trips on the coral reef environment, and by ensuring that the interaction between divers and the coral reefs is such that the negative impacts caused by divers are minimized.

- Holding tanks should be installed on all dive vessels and waste receptacles should be provided in all washrooms for the collection of toilet tissue. Boats not equipped with holding tanks should be required to settle an appropriate distance from the reef and transport their customers to the dive sites by dinghy.
- Leftover food and wash water should not be discarded into the ocean while the dive boats are moored at the dive sites. Researchers suggest that food dumping alters the natural composition of the reef community (e.g. Tratalos & Austin 2001). This practice should be discouraged. Fish feeding (which has been banned in several marine parks throughout the world) should also be discouraged.
- The number of mooring buoys is insufficient to meet the demand, given the large number of dive vessels at many sites. When the available buoys are occupied, boat crews will often rope their vessel onto a moored boat. In the presence of strong currents, this practice can be extremely destructive to coral as the buoys are dragged by the weight of the large dive boats. This practice should be strongly discouraged. Boat staff should be encouraged to anchor on the sandy bottom, a significant distance away from the reef and transport their customers to the dive sites by dinghy.
- A 'no touch' policy should be implemented and enforced by all dive operators. This policy should include both direct and indirect (e.g. with camera equipment or dive sticks) contact with the reef flora and fauna. Many companies advertise such a policy but do not consistently enforce it.
- The use of underwater cameras and video equipment should be restricted to less vulnerable dive sites that are not subjected to strong currents.

- Introductory dive courses should be restricted to less fragile dive sites outside of the Marine National Parks.
- Once certified, divers are not required to update their qualifications. With the exception of divers taking courses, individuals in Phuket were rarely required to show proof of their diving proficiency. Many divers were observed causing significant amounts of reef damage. All divers should be required to prove to their dive master their proficiency at maintaining neutral buoyancy before descending to the fragile coral reef environments, particularly within the Marine National Parks.

Crowding at the day trip dive sites is common as no fixed arrangements are made among the dive operators as to where they will be diving at any particular time. The degree of crowding at many of these sites is presently unacceptable, and efforts to decrease crowding at the dive sites are required:

- The use of the day trip dive sites should be scheduled among the dive operators who use the sites to minimize the number of divers present at any given time.
- The Dive Operators Club of Thailand should continue to explore the potential for artificial reef projects, with the goal of reducing the pressure on the day trip dive sites by creating new ones.

The degree of crowding at some of the liveaboard sites is presently unacceptable. The escalating use of high speed boats by Phuket dive operators means that increasing numbers of divers can now access these sites for day trips as well. Crowding and diminishing quality at the day trip sites will continue to magnify the pressure on the more remote liveaboard sites, many of which are located within the Similan and Surin Marine National Parks. Thus, it is increasingly necessary to implement effective management techniques to deal with these issues before their impacts become irreversible.

- The Dive Operators Club of Thailand (possibly in conjunction with the Similan and Surin Marine Park staff) should implement a quota system among their members to manage the use of the liveaboard sites to reduce crowding (i.e. only two dive boats may use a dive site at a time).

10.3 Suggestions for Future Research

The underlying objective of this study was to contribute to the sustainability of dive tourism in Phuket. It is intended that the findings reported here will provide a basis for future investigations and direction to future researchers, both in Phuket and at other dive tourism destinations throughout the world.

Given the considerable size and scope of the scuba diving industry throughout the world, the body of literature on the sport and its participants is relatively small. This study has added to the dive tourism literature by reinforcing the importance of marine environment to dive tourists and by estimating the financial contribution that diving can make to local tourism economies. These findings provide incentive for marine conservation initiatives, both in Phuket, and at dive tourism destinations throughout the world. This study has advanced the 'action grid' theory by introducing a new method of designing and interpreting the grids to highlight areas that require management attention, thus facilitating the maintenance of marine environments that provide satisfying experiences to divers. It has also contributed to the understanding of the recreation specialization theory in the context of both scuba diving and ecotourism. However, more research is needed to improve the understanding of dive tourists, and to ensure the sustainability of dive tourism operations both in Phuket and elsewhere.

The following are suggestions for future research.

1. Future visitor research might focus on the acceptability of environmental change at the dive sites, with the goal of aiding management in the maintenance of a desirable and satisfying dive environment. This could also contribute to the creation and use of artificial reefs for diving, thereby minimizing the pressure placed on the existing dive sites.
2. There is a need for additional visitor research in the area of recreation specialization. Because some of the 'ecotourist specialization' findings reported for this study were surprising, the replication of this research in other dive tourism locations would enhance the understanding of this concept. Future studies should also examine the relationship between diver specialization and ecotourist specialization, and consider the links between the degree of specialization and the perception of the impact of diving on the reef.

3. Because of the important contribution that diver education can make to the sustainability of the dive tourism industry, future research should focus on the design and implementation of effective environmental education and interpretation techniques and programs, with the goal of minimizing the impact that divers and dive trips have on the reef environment.

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APPENDIX 1. Pre and Post Day Trip Surveys.

PLEASE FILL OUT BEFORE DIVING.

SCUBA DIVING IN THAILAND



**A SURVEY OF DAY TRIP DIVER MOTIVATIONS
PRE-DIVE SURVEY**

**UNIVERSITY OF VICTORIA, CANADA
PROJECT AWARE
2000**

SCUBA DIVING IN PHUKET

In order to protect the coral reef and provide for positive visitor experiences, it is important for us to know your motivations and expectations for your dive trip.

Q-1. Is diving in Phuket:

- 1 THE MAIN REASON FOR YOUR VISIT TO PHUKET?
- 2 A PLANNED ACTIVITY ON YOUR VISIT TO PHUKET?
- 3 AN UNPLANNED ACTIVITY ON YOUR VISIT TO PHUKET?

Q-2. When did you arrange this dive trip?

- 1 WHEN I ARRIVED IN PHUKET
- 2 BEFORE I ARRIVED IN THAILAND
- 3 OTHER (please specify) _____

Q-3. How did you book this dive trip?

- 1 DIRECTLY WITH DIVE COMPANY
- 2 THROUGH A TOUR AGENT
- 3 OTHER (please specify) _____

Q-4. How many diving trips will you take on this vacation?

_____ DAY TRIPS

_____ LIVE ABOARDS

Q-5. Is this your first time diving in Thailand?

- 1 NO ⇒ How many previous trips have you made? _____
- 2 YES

DIVING MOTIVATIONS

Q-6. In order to provide a high quality diving experience, it is helpful for us to know why people participate in scuba diving. Listed below are a number of possible reasons for diving. Please show how important each reason is to you.

(Please circle a number beside each statement.)

POSSIBLE REASONS FOR DIVING	NOT AT ALL IMPORTANT					EXTREMELY IMPORTANT
	↓					↓
A. Interest in marine flora and fauna...	1	2	3	4	5	
B. Wilderness / nature experience.....	1	2	3	4	5	
C. Looking for adventure.....	1	2	3	4	5	
D. Interest in underwater photography...	1	2	3	4	5	
E. Interest in a special underwater feature.....	1	2	3	4	5	
F. To explore new environments.....	1	2	3	4	5	
G. To expand my knowledge.....	1	2	3	4	5	
H. To develop my diving skills.....	1	2	3	4	5	
I. To challenge my diving skills.....	1	2	3	4	5	
J. Image of the sport (glamorous, adventurous, exciting).....	1	2	3	4	5	
K. To be with friends/associates.....	1	2	3	4	5	
L. To escape the demands of everyday life.....	1	2	3	4	5	
M. Social activity.....	1	2	3	4	5	
N. Exercise.....	1	2	3	4	5	
Are there any others? (Please list.)						
O. _____	1	2	3	4	5	
P. _____	1	2	3	4	5	
Q. _____	1	2	3	4	5	

DIVING IN PHUKET

In order to provide visitors with positive experiences, it is important to know the expectations you have for your trip

Q-7. Listed below are a number of possible reasons why you may have decided to participate in diving while **in Phuket**. Please show how important each reason is to you.

POSSIBLE REASONS FOR DIVING IN PHUKET	NOT AT ALL IMPORTANT ↓					EXTREMELY IMPORTANT ↓
A. Holiday.....	1	2	3	4	5	
B. Similan's reputation as one of the worlds top ten dive sites.....	1	2	3	4	5	
C. Phuket's reputation as a resort destination.....	1	2	3	4	5	
D. Phuket's nightlife.....	1	2	3	4	5	
E. Combination of diving and nightlife..	1	2	3	4	5	
F. High quality service provided by the dive industry.....	1	2	3	4	5	
G. Inexpensive place for a dive holiday.....	1	2	3	4	5	
H. Enjoyed a previous visit- Return visit to Phuket for diving.....	1	2	3	4	5	
I. Opportunity to dive in a unique environment.....	1	2	3	4	5	
J. Opportunity to learn more about local marine flora and fauna.....	1	2	3	4	5	
K. Opportunity to learn more about the local people and culture.....	1	2	3	4	5	
Are there any others? (please list)						
L. _____	1	2	3	4	5	
M. _____	1	2	3	4	5	

YOUR DIVE TRIP

In order to ensure a high quality visitor experience, it is helpful for us to understand the types of features you desire on your Phuket dive trip.

Q-8. Thinking about the type of trip you hoping to experience in Phuket, please show how important the following environmental and setting features are to you. (Please circle.)

	ENVIRONMENT AND SETTING FEATURES	NOT AT ALL IMPORTANT ↓				EXTREMELY IMPORTANT ↓
A.	Good weather.....	1	2	3	4	5
B.	Warm water.....	1	2	3	4	5
C.	Good underwater visibility.....	1	2	3	4	5
D.	Variety and amount of marine life.....	1	2	3	4	5
E.	Clear, unpolluted dive sites.....	1	2	3	4	5
F.	Undamaged dive sites.....	1	2	3	4	5
G.	Easy dive conditions.....	1	2	3	4	5
H.	No crowding by other divers.....	1	2	3	4	5
I.	Good above water scenery.....	1	2	3	4	5
J.	Unique formations.....	1	2	3	4	5
K.	Whale sharks.....	1	2	3	4	5
L.	Other sharks.....	1	2	3	4	5
M.	Manta rays.....	1	2	3	4	5
N.	Turtles.....	1	2	3	4	5
O.	Good photo opportunities.....	1	2	3	4	5
P.	Opportunity to learn more about marine environments.....	1	2	3	4	5
	Are there any others? (Please list.)					
Q.	_____	1	2	3	4	5
R.	_____	1	2	3	4	5

Q-9. Of the features listed in Q-8, which are the most important to you?
(Please write the corresponding letter from Q-8 in the appropriate box.)

Most important Second most important

YOUR DIVE TRIP

Q-10. How important do you feel the provision of the following services will be to your enjoyment of this dive trip? (Please circle.)

SERVICE PROVIDED	NOT AT ALL					EXTREMELY
	IMPORTANT					IMPORTANT
	↓					↓
A. Accommodation on boat.....	1	2	3	4	5	
B. Food on boat.....	1	2	3	4	5	
C. Information provided by dive master.....	1	2	3	4	5	
D. Friendliness of crew.....	1	2	3	4	5	
E. Good safety procedures on boat.....	1	2	3	4	5	
F. Good dive master.....	1	2	3	4	5	
G. Good dive buddy.....	1	2	3	4	5	
H. Enjoyable dive group.....	1	2	3	4	5	
I. High quality of general service.....	1	2	3	4	5	
J. Commitment to the environment by the dive shop and boat crew.....	1	2	3	4	5	
K. Additional activities (dive courses, shore trips, snorkeling) Are there any others? (Please list.)	1	2	3	4	5	
L. _____	1	2	3	4	5	
M. _____	1	2	3	4	5	

Q-11. Of the features listed in Q-10, which are the most important to you?
(Please write the corresponding letter from Q-10 in the appropriate box.)

Most important

Second most important

THE REEF ENVIRONMENT

In order to manage the coral reefs to ensure satisfactory environmental conditions that provide visitors with positive experiences, it is useful for us to learn the impacts you feel diving and dive trips have on the reef environment.

Q-12. Listed below are a number of possible benefits and negative impacts of diving. Please show the extent to which you feel diving affects the environment. (Please circle)

POTENTIAL IMPACTS OF DIVING ON REEF	STRONGLY DISAGREE ↓	SOMEWHAT DISAGREE ↓	NOT SURE ↓	SOMEWHAT AGREE ↓	STRONGLY AGREE ↓
A. Negative impact on fish.....	1	2	3	4	5
B. Negative impact on coral.....	1	2	3	4	5
C. Negative impact on water quality....	1	2	3	4	5
D. Provides economic support for the protection of the reef.....	1	2	3	4	5
E. Provides education to divers, which helps protect the reef.....	1	2	3	4	5
F. Anchor damage.....	1	2	3	4	5
G. Garbage /Waste.....	1	2	3	4	5
H. Crowding (too many people at a dive-site cause more harm).....	1	2	3	4	5
I. Prevents fishing which helps protect the reef.....	1	2	3	4	5
Are there any others? (please list)					
J. _____	1	2	3	4	5
K. _____	1	2	3	4	5

Q13. Overall, do you feel the impact of diving on reefs is:

- 1 VERY NEGATIVE
- 2 SOMEWHAT NEGATIVE
- 3 SOMEWHAT POSITIVE
- 4 VERY POSITIVE
- 5 NOT SURE

Q14. Would you be interested in participating in a reef-monitoring project designed to help maintain environmental quality and minimize negative visitor impacts?

- 1 NO
- 2 YES
- 3 UNSURE

DIVING AND YOU

Now we would like to ask you about your previous scuba diving experience.

Q-15. In what year did you become a certified diver? _____

Q-16. Which diving courses have you taken? (Please circle)

- 1 OPEN WATER
- 2 ADVANCED OPEN WATER
- 3 OTHER Please list: _____

Q-17. In the last two years, how many dives have you done?

- 1 ZERO
- 2 1-5 DIVES
- 3 6-15 DIVES
- 4 16-25 DIVES
- 5 26-35 DIVES
- 6 more than 35 DIVES

Q-18. Do you own any of the following dive gear? (Please circle all that apply.)

- 1 MASK / SNORKEL / FINS
- 2 REGULATOR / GAUGES
- 3 BCD
- 4 UNDERWATER FLASHLIGHT
- 5 DIVER'S KNIFE
- 6 COMPASS
- 7 SPEARGUN
- 8 DIVE COMPUTER - Value (in US Dollars) \$ _____
- 9 STILL CAMERA - Value (in US Dollars) \$ _____
- 10 VIDEO CAMERA- Value (in US Dollars) \$ _____
- 11 CORAL FIELD GUIDE
- 12 FISH FIELD GUIDE
- 13 DIVE GLOVES
- 14 OTHER _____

Q-19. What is the total price of this equipment? (in US Dollars)

\$ _____ .00

Q-20. Do you belong to a dive club in your home country?

- 1 NO
- 2 YES (Name of dive club _____)

ABOUT YOU

Finally, we are interested in learning a bit about you. It is helpful for us to understand the type of people who travel to Phuket for scuba diving.

Q-29. What is your sex? 1 FEMALE
 2 MALE

Q-29b. Are you: 1 MARRIED
 2 UNMARRIED

Q-30. What is your nationality? _____

Q-31. In what country do you live? _____

Q-32. What is the highest level of education have you completed?

- 1 GRADE / PRIMARY SCHOOL
- 2 HIGH SCHOOL
- 3 COLLEGE / UNIVERSITY
- 4 BACHELOR'S DEGREE
- 5 MASTER'S DEGREE
- 6 DOCTORAL DEGREE
- 7 OTHER _____

Q-33. What is your age?

- 1 UNDER 25 YEARS
- 2 26-35 YEARS
- 3 36-45 YEARS
- 4 46-55 YEARS
- 5 56-65 YEARS
- 6 OVER 65 YEARS

Q-34. Who did you come on this dive trip with? (please circle all that apply)

- 1 ALONE
- 2 YOUR FAMILY
- 3 YOUR FRIENDS
- 4 OTHER please specify _____

Q-35. How many of these people are:

- _____ DIVERS
- _____ LEARNING TO DIVE
- _____ NON-DIVERS
- _____ OTHER

Q36. Is there anything else you would like to tell us about your hopes or expectations for this trip?

Thank you for your help!
Please return your completed survey to your divemaster.

ENJOY YOUR DIVE TRIP!

NAME: _____

*If you do not wish to leave your name, please choose a code name to use for both surveys. We need to match up your before and after surveys for analysis. Your name will be removed from the surveys as soon as both are completed.

PLEASE FILL OUT AFTER DIVING.

SCUBA DIVING IN THAILAND



A SURVEY OF DAY TRIP DIVER SATISFACTIONS
POST DIVE SURVEY

UNIVERSITY OF VICTORIA, CANADA
PROJECT AWARE
2000

YOUR DIVING EXPERIENCE

Now that your trip is almost over, we are interested in learning how well it has lived up to your expectations and met your needs.

Q-1. On a scale of 1 to 10, with 1 being very unsatisfied and 10 being very satisfied, please indicate how satisfied are you **overall** with your diving experience.

(Please circle the number that best reflects your feelings)

1-----2-----3-----4-----5-----6-----7-----8-----9-----10
 VERY UNSATISFIED VERY SATISFIED

Q-2. Overall, how would you rate this diving experience compared to your expectations?

- | | |
|---|----------------|
| 1 | MUCH WORSE |
| 2 | WORSE |
| 3 | ABOUT THE SAME |
| 4 | BETTER |
| 5 | MUCH BETTER |

Q-3. How would you rate this diving experience compared to your previous diving experiences?

- | | |
|---|----------------|
| 1 | MUCH WORSE |
| 2 | WORSE |
| 3 | ABOUT THE SAME |
| 4 | BETTER |
| 5 | MUCH BETTER |

Q-4. How many dives did you do? _____

Q-4b. What dive sites did you visit today? (please list)

DIVER SATISFACTIONS

Q-7. Overall, how did the opportunities provided on this dive trip live up to your expectations? Please show how satisfied you are with the following:

OPPORTUNITIES PROVIDED TODAY	VERY UNSATISFIED ↓	UNSATISFIED ↓	NEUTRAL ↓	SOMEWHAT SATISFIED ↓	VERY SATISFIED ↓
A. Marine flora and fauna...	1	2	3	4	5
B. Wilderness / nature experience.....	1	2	3	4	5
C. Looking for adventure.....	1	2	3	4	5
D. Interest in underwater photography.	1	2	3	4	5
E. Interest in a special underwater feature.....	1	2	3	4	5
F. To explore new environments.....	1	2	3	4	5
G. To expand my knowledge.....	1	2	3	4	5
H. To develop my diving skills.....	1	2	3	4	5
I. To challenge my diving skills	1	2	3	4	5
J. Image of the sport (glamorous, adventurous, exciting).....	1	2	3	4	5
K. To be with friends/associates.....	1	2	3	4	5
L. To escape demands of everyday life	1	2	3	4	5
M. Social activity.....	1	2	3	4	5
N. Exercise.....	1	2	3	4	5
Did this trip provide any additional opportunities? Please list:					
O. _____	1	2	3	4	5
P. _____	1	2	3	4	5
Q. _____	1	2	3	4	5

Q-8. Did you experience anything on this trip that made it better or worse than you wanted it to be?

THE DIVING ENVIRONMENT

Q-9. To help us understand what you like or didn't like about your dive trip, please show how satisfied you are with the following aspects of your trip.

(Please circle a number beside each statement that best reflects your feelings.)

ENVIRONMENT AND SETTING FEATURES	VERY UNSATISFIED ↓	UNSATISFIED ↓	NEUTRAL ↓	SOMEWHAT SATISFIED ↓	VERY SATISFIED ↓
A. Good weather.....	1	2	3	4	5
B. Warm water.....	1	2	3	4	5
C. Good underwater visibility.....	1	2	3	4	5
D. Variety and amount of marine life.....	1	2	3	4	5
E. Clear, unpolluted dive sites.....	1	2	3	4	5
F. Undamaged dive sites.....	1	2	3	4	5
G. Easy dive conditions	1	2	3	4	5
H. No crowding by other divers.....	1	2	3	4	5
I. Good above water scenery.....	1	2	3	4	5
J. Unique formations.....	1	2	3	4	5
K. Whale sharks.....	1	2	3	4	5
L. Other sharks.....	1	2	3	4	5
M. Manta rays.....	1	2	3	4	5
N. Turtles.....	1	2	3	4	5
O. Good photo opportunities.....	1	2	3	4	5
P. Opportunity to learn more about marine environments.....	1	2	3	4	5
Are there any others? (Please list.)					
Q. _____	1	2	3	4	5
R. _____	1	2	3	4	5

Q-10. Of the features listed in Q-9, which did you enjoy the **most**?

(Please write the corresponding letter from Q-9 in the appropriate box.)

Most enjoyable

Second most enjoyable

ON BOAT SERVICES

Q-12. Please show your satisfaction with the following aspects of your dive trip.
(Please circle.)

SERVICE PROVIDED	VERY UNSATISFIED ↓	UNSATISFIED ↓	NEUTRAL ↓	SOMEWHAT SATISFIED ↓	VERY SATISFIED ↓
A. Accommodation on boat.....	1	2	3	4	5
B. Food on boat.....	1	2	3	4	5
C. Information provided by dive master.....	1	2	3	4	5
D. Friendliness of crew.....	1	2	3	4	5
E. Good safety procedures on boat...	1	2	3	4	5
F. Good dive master.....	1	2	3	4	5
G. Good dive buddy.....	1	2	3	4	5
H. Enjoyable dive group.....	1	2	3	4	5
I. High quality of general service....	1	2	3	4	5
J. Commitment to the environment by the dive shop and boat crew....	1	2	3	4	5
K. Additional activities (dive courses, shore trips, snorkeling)	1	2	3	4	5
Were any other services provided on your dive trip? (Please list.)					
L. _____	1	2	3	4	5
M. _____	1	2	3	4	5

Q-13. Of the features listed in Q-12, which two are you most satisfied with?

(Please write the corresponding letter from Q-12 in the appropriate box.)

Most satisfied with

Second most satisfied with

THE REEF ENVIRONMENT

Q-15. On your dive trip, you may have seen some evidence of positive and negative impacts of diving. Please indicate the extent to which you feel diving affects the reef environment.

POTENTIAL IMPACTS OF DIVING ON REEF	STRONGLY DISAGREE	SOMEWHAT DISAGREE	NOT SURE	SOMEWHAT AGREE	STRONGLY AGREE
	↓	↓	↓	↓	↓
A. Negative impact on fish.....	1	2	3	4	5
B. Negative impact on coral.....	1	2	3	4	5
C. Negative impact on water quality....	1	2	3	4	5
D. Provides economic support for the protection of the reef.....	1	2	3	4	5
E. Provides education to divers, which helps protect the reef.....	1	2	3	4	5
F. Anchor damage.....	1	2	3	4	5
G. Garbage /Waste.....	1	2	3	4	5
H. Crowding (too many people at a dive site cause more harm).....	1	2	3	4	5
I. Prevents fishing, which helps protect the reef.....	1	2	3	4	5
Did you notice any other positive or negative impacts? Please list:					
J. _____	1	2	3	4	5
K. _____	1	2	3	4	5

Q-16. Overall, do you feel the impact of diving on reefs is:

- | | |
|---|-------------------|
| 6 | VERY NEGATIVE |
| 7 | SOMEWHAT NEGATIVE |
| 8 | SOMEWHAT POSITIVE |
| 9 | VERY POSITIVE |
| 5 | NOT SURE |

Q-17. Did you see any evidence of negative impacts on the reef environment created by participants in your dive group?

- | | |
|---|-------------------------|
| 1 | NO |
| 2 | YES Please describe: |

THE DIVE SITES

Q-18. Would you like to comment on the quality of the dive sites or on any impacts that you may have noticed at the dive sites? If so, please use the space below.

Q-19. Would you be interested in participating in a reef-monitoring project designed to help maintain environmental quality and minimize negative visitor impacts at the dive sites?

- 1 NO
- 2 YES

Q-20. Would you be willing to make an additional monetary contribution towards the protection of the marine environment and the dive sites you visited?

- 1 NO
- 2 YES

How much would you be willing to contribute? _____

Q-21. Did you dive in a National Marine Park today?

- 1 NO
- 2 YES
- 3 NOT SURE

Q-22. Would you return to Phuket for diving based on your experiences today?

- 1 NO
- 2 YES
- 3 NOT SURE

Q-23. Would you return to the same dive company based on your experiences today?

- 1 NO
- 2 YES
- 3 NOT SURE

Finally, is there anything else you would like to tell us about your scuba diving experience? If so, please use the space below to express your views.

THANK YOU FOR YOUR HELP!

**PLEASE PLACE YOUR COMPLETED SURVEY
IN THE ENCLOSED ENVELOPE
AND RETURN IT TO YOUR DIVE MASTER.**

NAME: _____

*please use the same name you used for the before survey.

**If you would like to be contacted when the results of this survey become available,
please leave us your email address:**

APPENDIX 2. Descriptive Results

Pre-Dive Survey Results

Table 1.0 Trip Type

Type of Scuba Diving Trip	%	(n)
Day Trip	39.8	(246)
Live Aboard Trip	61.1	(386)
Total	100 %	(632)

Table 2.0 Type of Survey Completed

Type of Survey	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Before Survey Only	10.2	(25)	21.0	(81)	16.8	(106)
Before and After Survey	79.7	(196)	71.8	(277)	74.8	(473)
After Survey Only	6.5	(16)	7.3	(28)	7.0	(44)
Detailed After Survey Only	3.7	(9)	0	0	1.4	(9)
Total	100%	(246)	100%	(386)	100%	(632)

Table 3.0 Importance of Diving as a Reason for the Trip to Phuket (QB1)

Reason	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Diving was the main reason	47.3	(107)	74.7	(266)	64.1	(373)
Diving was a planned activity	47.3	(107)	22.8	(81)	32.3	(188)
Diving was an unplanned activity	5.3	(12)	2.5	(9)	3.6	(21)
Total	100%	(226)	100%	(356)	100%	(582)
Non Response		(4)		(2)		(6)

$\chi^2 = 45.010$, $df = 2$, $sig = .000$

Table 4.0 When the Dive Trip was Arranged (QB2)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
On Arrival In Phuket	68.3	(155)	23.6	(84)	41.0	(239)
Before Arrival in Thailand	29.5	(67)	72.8	(259)	55.9	(326)
Other	2.2	(5)	3.7	(13)	3.1	(18)
Total	100%	(227)	100%	(356)	100%	(583)
Non Response		(3)		(2)		(5)

$\chi^2 = 114.804$, $df = 2$, $sig = .000$

Table 5.0 How the Dive Trip was Arranged (QB3)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Through the Dive Company	82.9	(189)	64.4	(228)	71.6	(417)
Through a Tour Agent	11.4	(26)	27.7	(96)	21.3	(124)
Other	5.7	(13)	7.9	(28)	7	(41)
Total	100%	(228)	100%	(354)	100%	(582)
Non Response		(2)		(4)		(6)

$\chi^2 = 24.827$, $df = 2$, $sig = .000$

Table 6.0 Length of Live Aboard Dive Trip (QB4-LA)*

Days	Response	
	%	(n)
1-2 Days	1.4	(5)
3-4 Days	30.2	(105)
5-6 Days	39.4	(137)
7-8 Days	19.2	(67)
9-10 Days	8.6	(30)
More than 10 Days	1.2	(4)
Total	100%	(348)

* Day Trip Divers were not given this question.

Table 7.0 Number of Day Trips on this Vacation(QB4-DT)

Days	Response	
	%	(n)
1-2 Days	37.0	(81)
3-4 Days	32.0	(70)
5-6 Days	15.9	(35)
7-8 Days	5.5	(12)
9-10 Days	4.1	(9)
More than 10 Days	5.5	(12)
Total	100%	(219)
Non Response		(11)

* Live Aboard Trip Divers were not given this question.

Table 8.0 Is This The Visitors First Diving Experience in Thailand? (QB5)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
No	37.9	(86)	40.7	(145)	39.6	(231)
Yes	62.1	(141)	59.3	(211)	60.4	(352)
Total	100%	(227)	100%	(356)	100%	(583)
Non Response		(3)		(2)		(5)

$\chi^2 = .469$, $df = 1$, $sig = .493$

Table 9.0 Is This The Visitors First Live Aboard Diving Trip in Thailand? (QB5b)*

Response	Response	
	%	(n)
Yes	77.8	(252)
No	22.2	(72)
Total	100%	(324)
Non Response		(62)

* Day Trip Divers were not given this question.

** This question was not present in the original version of the survey. Divers who completed the survey during the first three sampling weeks were not given this question. This accounts for the large non-response rate.

Table 10.0 The Importance of Various Reasons as Motivations for Participating in Diving (QB6)- Overall Results

Possible Motivations For Diving	Response												
	Not At All Important		2		3		4		Extremely Important		Non Response		
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)			
Interest in Marine Flora and Fauna	0	(0)	1.9	(11)	15.8	(91)	31.1	(179)	51.2	(295)	4.3	80	(3)
Wilderness / Nature Experience	1.0	(6)	2.8	(16)	19.1	(110)	37.4	(215)	39.7	(228)	4.1	.88	(4)
Looking for Adventure	10.5	(60)	16.7	(95)	30.5	(174)	24.6	(140)	17.7	(101)	3.2	1.22	(9)
Interest in Underwater Photography	29.1	(165)	21.0	(119)	21.3	(121)	13.4	(76)	15.2	(86)	2.6	1.41	(12)
Interest in Special Underwater Feature	18.3	(103)	20.1	(113)	32.7	(184)	15.1	(85)	13.7	(77)	2.9	1.27	(17)
To Explore New Environments	2.3	(13)	6.6	(38)	24.4	(140)	39.0	(224)	27.7	(159)	3.8	.98	(5)
To Expand My Knowledge	1.6	(9)	7.0	(40)	23.3	(134)	36.3	(209)	31.8	(183)	3.9	.98	(4)
To Develop My Diving Skills	5.0	(29)	8.8	(51)	26.9	(155)	28.6	(165)	30.7	(177)	3.7	1.14	(2)
To Challenge My Diving Skills	17.1	(98)	17.8	(102)	35.1	(201)	15.4	(88)	14.5	(83)	2.9	1.26	(7)
Image of the Sport (glamor,adventure)	38.1	(218)	20.1	(115)	22.0	(126)	11.9	(68)	7.9	(45)	2.3	1.3	(7)
To Be With Friends/Family/Associates	13.8	(79)	18.1	(104)	28.7	(165)	25.1	(144)	14.3	(82)	3.1	1.24	(5)
Escape the Demands of Everyday Life	9.9	(57)	9.6	(55)	23	(132)	28.0	(161)	29.4	(169)	3.6	1.27	(5)
Social Activity	13.9	(79)	17.0	(97)	39.1	(223)	21.1	(120)	8.9	(51)	2.9	1.14	(9)
Exercise	17.9	(102)	20.1	(114)	33.9	(193)	20.9	(119)	7.2	(41)	2.8	1.17	(10)

Table 10.1 The Importance of Various Reasons as Motivations for Participating in Diving (QB6)- Day Trip Results

Possible Motivations For Diving	Response												
	Not At All Important		2		3		4		Extremely Important		Non Response		
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)			
Interest in Marine Flora and Fauna	0	(0)	2.7	(6)	14.9	(33)	34.4	(76)	48.0	(106)	4.3	.81	(0)
Wilderness / Nature Experience	1.4	(3)	3.7	(8)	18.3	(40)	41.3	(90)	35.3	(77)	4.1	.90	(3)
Looking for Adventure	14.6	(31)	13.7	(29)	27.4	(58)	25.9	(55)	18.4	(39)	3.2	1.29	(9)
Interest in Underwater Photography	31.9	(68)	20.2	(43)	26.3	(56)	13.1	(28)	8.5	(18)	2.5	1.29	(8)
Interest in Special Underwater Feature	20.6	(44)	20.1	(43)	35.0	(75)	14.0	(30)	10.3	(22)	2.7	1.22	(7)
To Explore New Environments	2.8	(6)	6.4	(14)	23.9	(52)	39.0	(85)	28.0	(61)	3.8	1.00	(3)
To Expand My Knowledge	.5	(1)	7.8	(17)	20.3	(44)	32.3	(70)	39.2	(85)	4.0	.98	(4)
To Develop My Diving Skills	1.8	(4)	4.1	(9)	26.5	(58)	30.1	(66)	37.4	(82)	4.0	.99	(2)
To Challenge My Diving Skills	14.8	(32)	13.4	(29)	38.4	(83)	15.3	(33)	18.1	(39)	3.1	1.27	(5)
Image of the Sport (glamor,adventure)	30.2	(65)	25.6	(55)	19.1	(41)	15.8	(34)	9.3	(20)	2.5	1.32	(6)
To Be With Friends/Family/Associates	11.1	(24)	16.6	(36)	33.6	(73)	23.0	(50)	15.7	(34)	3.2	1.20	(4)
Escape the Demands of Everyday Life	10.1	(22)	10.1	(22)	22.0	(48)	27.5	(60)	30.3	(66)	3.6	1.29	(3)
Social Activity	12.0	(26)	17.1	(37)	41.0	(89)	19.4	(42)	10.6	(23)	3.0	1.13	(4)
Exercise	12.1	(26)	18.2	(39)	31.8	(68)	30.4	(65)	7.5	(16)	3.0	1.13	(7)

Table 10.2 The Importance of Various Reasons as Motivations for Participating in Diving (QB6)- Live Aboard Results

Possible Motivations For Diving	Response												
	Not At All Important		2		3		4		Extremely Important		Non Response		
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)			
Interest in Marine Flora and Fauna	0	(0)	1.4	(5)	16.3	(58)	29.0	(103)	53.2	(189)	4.3	.79	(3)
Wilderness / Nature Experience	.8	(3)	2.2	(8)	19.6	(70)	35.0	(125)	42.3	(151)	4.2	.97	(1)
Looking for Adventure	8.1	(29)	18.4	(66)	32.4	(116)	23.7	(85)	17.3	(62)	3.2	1.18	(0)
Interest in Underwater Photography	27.4	(97)	21.5	(76)	18.4	(65)	13.6	(48)	19.2	(68)	2.8	1.47	(4)
Interest in Special Underwater Feature	17	(59)	20.1	(70)	31.3	(109)	15.8	(55)	15.8	(55)	2.9	1.29	(10)
To Explore New Environments	2.0	(7)	6.7	(24)	24.7	(88)	39.0	(139)	27.5	(98)	3.8	.97	(2)
To Expand My Knowledge	2.2	(8)	6.4	(23)	25.1	(90)	38.8	(139)	27.4	(98)	3.8	.98	(0)
To Develop My Diving Skills	7.0	(25)	11.7	(42)	27.1	(97)	27.7	(99)	26.5	(95)	3.6	1.20	(0)
To Challenge My Diving Skills	18.5	(66)	20.5	(73)	33.1	(118)	15.4	(55)	12.4	(44)	2.8	1.25	(2)
Image of the Sport (glamor,adventure)	42.9	(153)	16.8	(60)	23.8	(85)	9.5	(34)	7.0	(25)	2.2	1.28	(1)
To Be With Friends/Family/Associates	15.4	(55)	9.0	(68)	25.8	(92)	26.3	(94)	13.4	(48)	3.0	1.27	(1)
Escape the Demands of Everyday Life	9.8	(35)	9.3	(33)	23.6	(84)	28.4	(101)	28.9	(103)	3.6	1.27	(2)
Social Activity	15.0	(53)	17.0	(60)	38.0	(134)	22.1	(78)	7.9	(28)	2.9	1.14	(5)
Exercise	21.4	(76)	21.1	(75)	35.2	(125)	15.2	(54)	7.0	(25)	2.7	1.18	(3)

Table 11.0 The Importance of Various Reasons as Motivations for Diving in Phuket (QB7)- Overall Results

Possible Motivations For Diving in Phuket	Response									
	Not At All						Extremely		Non	
	Important	2	3	4	Important	Mean	SD	Respons		
	% (n)	% (n)	% (n)	% (n)	% (n)			(n)		
Holiday	6.7 (38)	5.4 (31)	20.6 (117)	34.4 (196)	32.9 (187)	3.8	1.15	(10)		
Similan's Reputation as Top Ten Dive Site	6.7 (38)	8.5 (48)	21.5 (121)	31.9 (180)	31.4 (177)	3.7	1.18	(15)		
Phuket's Reputation as Resort Destination	27.3 (155)	19.4 (110)	35.3 (200)	14.6 (83)	3.4 (19)	2.5	1.14	(12)		
Phuket's Nightlife	54.9 (314)	22.9 (131)	15.0 (86)	4.4 (25)	2.8 (16)	1.8	1.04	(7)		
Combination of Diving and Nightlife	46.4 (265)	19.8 (113)	22.4 (128)	6.5 (37)	4.9 (28)	2.0	1.18	(8)		
High Quality Service Provided by Industry	4.4 (25)	9.9 (56)	29.6 (167)	34.2 (193)	21.8 (123)	3.6	1.07	(15)		
Inexpensive Place for Dive Holiday	10.1 (57)	15.8 (89)	37.6 (212)	26.8 (151)	9.8 (55)	3.1	1.10	(15)		
Enjoyed a Previous Visit- Return Visit	39.5 (181)	6.8 (31)	21.8 (100)	19.0 (87)	12.9 (59)	2.6	1.48	(121)		
Opportunity to Dive in Unique Environment	2.5 (14)	4.4 (25)	24.6 (140)	39.0 (222)	29.5 (168)	3.9	.96	(10)		
Want to Learn About Marine Flora / Fauna	1.4 (8)	5.4 (31)	19.0 (109)	41.7 (239)	32.5 (186)	4.0	.93	(6)		
Want to Learn About Local People/Culture	5.9 (34)	12.7 (73)	33.0 (189)	30.4 (174)	18.0 (103)	3.4	1.10	(6)		

Table 11.1 The Importance of Various Reasons as Motivations for Diving in Phuket (QB7)- Day Trip Results

Possible Motivations For Diving in Phuket	Response									
	Not At All						Extremely		Non	
	Important	2	3	4	Important	Mean	SD	Respons		
	% (n)	% (n)	% (n)	% (n)	% (n)			(n)		
Holiday	4.2 (9)	7.4 (16)	15.7 (34)	33.8 (73)	38.9 (84)	4.0	1.22	(5)		
Similan's Reputation as Top Ten Dive Site	13.7 (29)	10.9 (23)	28.4 (60)	27.5 (58)	19.4 (41)	3.3	1.64	(10)		
Phuket's Reputation as Resort Destination	29.0 (45)	15.3 (33)	40.0 (86)	20.0 (43)	3.7 (8)	2.7	1.26	(6)		
Phuket's Nightlife	48.4 (105)	25.3 (55)	16.1 (35)	6.0 (13)	4.1 (9)	1.9	1.26	(4)		
Combination of Diving and Nightlife	41.3 (90)	12.8 (28)	31.2 (68)	7.3 (16)	7.3 (16)	2.3	1.27	(3)		
High Quality Service Provided by Industr	3.8 (8)	7.5 (16)	28.2 (60)	36.6 (78)	23.9 (51)	3.7	1.04	(8)		
Inexpensive Place for Dive Holiday	6.1 (13)	10.8 (23)	35.7 (76)	34.3 (73)	13.1 (28)	3.4	1.04	(8)		
Enjoyed a Previous Visit- Return Visit	33.7 (60)	6.7 (12)	23.6 (42)	22.5 (40)	13.5 (24)	2.8	1.46	(43)		
Opportunity to Dive in Unique Environm	3.7 (8)	3.3 (7)	29.8 (64)	38.1 (82)	25.1 (54)	3.8	.98	(6)		
Want to Learn About Marine Flora / Faun	1.4 (3)	5.5 (12)	19.4 (42)	42.4 (92)	31.3 (68)	4.0	.92	(4)		
Want to Learn About Local People/Cultur	2.8 (6)	10.1 (22)	33.6 (73)	30.4 (66)	23.0 (50)	3.6	1.04	(4)		

Table 11.2 The Importance of Various Reasons as Motivations for Diving in Phuket (QB7)- Live Aboard Results

Possible Motivations For Diving in Phuket	Response									
	Not At All						Extremely		Non	
	Important	2	3	4	Important	Mean	SD	Respons		
	% (n)	% (n)	% (n)	% (n)	% (n)			(n)		
Holiday	8.2 (29)	4.2 (15)	23.5 (83)	34.8 (123)	29.2 (103)	3.7	1.17	(5)		
Similan's Reputation as Top Ten Dive Site	2.5 (9)	7.1 (25)	17.3 (61)	34.6 (122)	38.5 (136)	4.0	1.04	(5)		
Phuket's Reputation as Resort Destination	31.3 (110)	21.9 (77)	32.4 (114)	11.4 (40)	3.1 (11)	2.3	1.12	(6)		
Phuket's Nightlife	58.9 (209)	21.4 (76)	14.4 (51)	3.4 (12)	2.0 (7)	1.7	.97	(6)		
Combination of Diving and Nightlife	49.6 (175)	24.1 (85)	17.0 (60)	5.9 (21)	3.4 (12)	1.9	1.10	(5)		
High Quality Service Provided by Industr	4.8 (17)	11.4 (40)	30.5 (107)	32.8 (115)	20.5 (72)	3.5	1.09	(7)		
Inexpensive Place for Dive Holiday	12.5 (44)	18.8 (66)	38.7 (136)	22.2 (78)	7.7 (27)	2.9	1.10	(7)		
Enjoyed a Previous Visit- Return Visit	43.2 (121)	6.8 (19)	20.7 (58)	16.8 (47)	12.5 (35)	2.5	1.49	(78)		
Opportunity to Dive in Unique Environm	1.7 (6)	5.1 (18)	21.5 (76)	39.5 (140)	32.2 (114)	4.0	.95	(4)		
Want to Learn About Marine Flora / Faun	1.4 (5)	5.3 (19)	18.8 (67)	41.3 (147)	33.1 (118)	4.0	.93	(2)		
Want to Learn About Local People/Cultur	7.9 (28)	14.3 (51)	32.6 (116)	30.3 (108)	14.9 (53)	3.3	1.13	(2)		

Table 12.0 The Importance of Various Environmental and Setting Features to the Enjoyment of the Dive Trip (QB8)

n=579	Overall Results		Response					Mean	SD	Non Response
	Not At All Important		2	3	4	Extremely Important				
Environment and Setting Features	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)			(n)	
Good Weather	.5 (3)	1.2 (7)	11.1 (64)	41.6 (239)	45.5 (261)	4.3	.76	(5)		
Warm Water	1.6 (9)	2.3 (13)	12.5 (72)	46.0 (264)	37.6 (216)	4.2	.84	(5)		
Good Underwater Visibility	0 (0)	.9 (5)	6.4 (37)	35.1 (202)	57.6 (332)	4.5	.66	(3)		
Variety and Amount of Marine Life	.2 (1)	0 (0)	3.3 (19)	30.0 (173)	66.5 (383)	4.6	.57	(3)		
Clear, Unpolluted Dive Sites	0 (0)	.7 (4)	2.9 (17)	22.0 (127)	74.4 (429)	4.7	.56	(2)		
Undamaged Dive Sites	0 (0)	.3 (2)	4.5 (26)	22.6 (130)	72.6 (418)	4.7	.58	(3)		
Easy Dive Conditions	5.7 (33)	14.6 (84)	37.8 (217)	26.3 (151)	15.5 (89)	3.3	1.08	(5)		
No Crowding by Other Divers	.3 (2)	2.6 (15)	13.7 (79)	35.4 (204)	47.9 (276)	4.3	.82	(3)		
Good Above Water Scenery	1.6 (9)	9.4 (54)	37.6 (216)	33.3 (191)	18.1 (104)	3.6	.94	(5)		
Unique Formations	1.4 (8)	5.4 (31)	30.0 (171)	39.8 (227)	23.3 (133)	3.8	.91	(9)		
Whale Sharks	2.6 (15)	6.6 (38)	19.3 (111)	27.1 (156)	44.3 (255)	4.0	1.07	(4)		
Other Sharks	5.0 (29)	8.7 (50)	22.0 (127)	31.6 (182)	32.6 (188)	3.8	1.14	(3)		
Manta Rays	1.4 (8)	5.2 (30)	17.5 (101)	33.2 (191)	42.7 (246)	4.1	.96	(3)		
Turtles	1.7 (10)	5.9 (34)	26.9 (154)	37.0 (212)	28.4 (163)	3.8	.96	(6)		
Good Photo Opportunities	24.1 (137)	15.6 (89)	23.6 (134)	18.8 (107)	17.9 (102)	2.9	1.42	(10)		
Opportunity to Learn about Marine Environment	1.1 (6)	5.8 (33)	26.5 (151)	40.9 (233)	25.8 (147)	3.8	.91	(9)		

Table 12.1 The Importance of Various Environmental and Setting Features to the Enjoyment of the Dive Trip (QB8)

n=221	Day Trip Results		Response					Mean	SD	Non Response
	Not At All Important		2	3	4	Extremely Important				
Environment and Setting Features	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)			(n)	
Good Weather	0 (0)	.5 (1)	12.8 (28)	35.3 (77)	51.4 (112)	4.4	.72	(3)		
Warm Water	.5 (1)	1.4 (3)	10.6 (23)	45.0 (98)	42.7 (93)	4.3	.74	(3)		
Good Underwater Visibility	0 (0)	1.4 (3)	4.5 (10)	29.5 (65)	64.5 (142)	4.6	.65	(1)		
Variety and Amount of Marine Life	.5 (1)	0 (0)	2.7 (6)	31.8 (70)	65.0 (143)	4.6	.59	(1)		
Clear, Unpolluted Dive Sites	0 (0)	1.4 (3)	2.7 (6)	21.4 (47)	74.5 (164)	4.7	.59	(1)		
Undamaged Dive Sites	0 (0)	.5 (1)	3.2 (7)	22.8 (50)	73.5 (161)	4.7	.55	(2)		
Easy Dive Conditions	2.3 (5)	11.5 (25)	30.7 (67)	35.8 (78)	19.7 (43)	3.6	1.00	(3)		
No Crowding by Other Divers	0 (0)	3.6 (8)	14.5 (32)	35.9 (79)	45.9 (101)	4.2	.83	(1)		
Good Above Water Scenery	.5 (1)	9.6 (21)	38.1 (83)	33.5 (73)	18.3 (40)	3.6	.91	(3)		
Unique Formations	2.8 (6)	5.6 (12)	29.6 (64)	38.4 (83)	23.6 (51)	3.7	.97	(5)		
Whale Sharks	4.6 (10)	10.6 (23)	25.7 (56)	27.5 (60)	31.7 (69)	3.7	1.15	(3)		
Other Sharks	7.3 (16)	9.6 (21)	30.1 (66)	28.8 (63)	24.1 (53)	3.5	1.17	(2)		
Manta Rays	1.4 (3)	7.8 (17)	26.5 (58)	29.2 (64)	35.2 (77)	3.9	1.02	(2)		
Turtles	2.3 (5)	5.0 (11)	27.5 (60)	37.6 (82)	27.5 (60)	3.8	.97	(3)		
Good Photo Opportunities	28.6 (61)	16.4 (35)	25.8 (55)	16.9 (36)	12.2 (26)	2.7	1.37	(8)		
Opportunity to Learn about Marine Environment	.5 (1)	4.6 (10)	28.4 (62)	39.9 (87)	26.6 (58)	3.9	.87	(3)		

Table 12.2 The Importance of Various Environmental and Setting Features to the Enjoyment of the Dive Trip (QB8)

n=358	Live Aboard Results		Response					Mean	SD	Non Response
	Not At All Important		2	3	4	Extremely Important				
Environment and Setting Features	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)			(n)	
Good Weather	.8 (3)	1.7 (6)	10.1 (36)	45.5 (162)	41.9 (149)	4.3	.77	(2)		
Warm Water	2.2 (8)	2.8 (10)	13.8 (49)	46.6 (166)	34.6 (123)	4.1	.89	(2)		
Good Underwater Visibility	0 (0)	.6 (2)	7.6 (27)	38.5 (137)	53.4 (190)	4.5	.66	(2)		
Variety and Amount of Marine Life	0 (0)	0 (0)	3.7 (13)	28.9 (103)	67.4 (240)	4.6	.55	(2)		
Clear, Unpolluted Dive Sites	0 (0)	.3 (1)	3.1 (11)	22.4 (80)	74.2 (265)	4.7	.54	(1)		
Undamaged Dive Sites	0 (0)	.3 (1)	5.3 (19)	22.4 (80)	72.0 (257)	4.7	.59	(1)		
Easy Dive Conditions	7.9 (28)	16.6 (59)	42.1 (150)	20.5 (73)	12.9 (46)	3.1	1.09	(2)		
No Crowding by Other Divers	.6 (2)	2.0 (7)	13.2 (47)	35.1 (125)	49.2 (175)	4.3	.81	(2)		
Good Above Water Scenery	2.3 (8)	9.3 (33)	37.4 (133)	33.1 (118)	18.0 (64)	3.6	.96	(2)		
Unique Formations	.6 (2)	5.4 (19)	30.2 (107)	40.7 (144)	23.2 (82)	3.8	.87	(4)		
Whale Sharks	1.4 (5)	4.2 (15)	15.4 (55)	26.9 (96)	52.1 (186)	4.2	.96	(1)		
Other Sharks	3.6 (13)	8.1 (29)	17.1 (61)	33.3 (119)	37.8 (135)	3.9	1.00	(1)		
Manta Rays	1.4 (5)	3.8 (13)	12.0 (43)	35.6 (127)	47.3 (169)	4.2	.90	(1)		
Turtles	1.4 (5)	6.5 (23)	26.5 (94)	36.6 (130)	29.0 (103)	3.9	.96	(3)		
Good Photo Opportunities	21.3 (76)	15.2 (54)	22.2 (79)	19.9 (71)	21.3 (76)	3.0	1.44	(2)		
Opportunity to Learn about Marine Environment	1.4 (5)	6.5 (23)	25.3 (89)	41.5 (146)	25.3 (89)	3.8	.93	(6)		

Table 12.3 The Most Important Environmental / Setting Feature (Qb9a)

Environment and Setting Features	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Variety and Amount of Marine Life	30.7	(55)	30.8	(97)	30.8	(152)
Clear, Unpolluted Dive Sites	21.2	(38)	14.0	(44)	16.6	(82)
Undamaged Dive Sites	10.1	(18)	14.9	(47)	13.2	(65)
Whale Sharks	2.8	(5)	17.5	(55)	12.1	(60)
Good Underwater Visibility	8.9	(16)	5.7	(18)	6.9	(34)
Good Weather	9.5	(17)	4.1	(13)	6.1	(30)
Opportunity to Learn about Marine Environments	5.6	(10)	1.9	(6)	3.2	(16)
No Crowding by Other Divers	4.5	(8)	1.6	(5)	2.6	(13)
Manta Rays	.6	(1)	2.2	(7)	1.6	(8)
Good Photo Opportunities	0	(0)	2.5	(8)	1.6	(8)
Warm Water	1.1	(2)	1.3	(4)	1.2	(6)
Easy Dive Conditions	1.7	(3)	1.0	(3)	1.2	(6)
Good Above Water Scenery	1.1	(2)	1.3	(4)	1.2	(6)
Unique Formations	1.1	(2)	1.0	(3)	1.0	(5)
Other Sharks	.6	(1)	1.0	(3)	.4	(2)
Turtles	.6	(1)	0	(0)	.2	(1)
Total	100%	(179)	100%	(315)	100%	(494)
Non Response		(42)		(43)		(85)

Table 12.4 The Second Most Important Environmental / Setting Feature (Qb9b)

Environment and Setting Features	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Clear, Unpolluted Dive Sites	22.9	(40)	14.8	(46)	17.7%	(86)
Undamaged Dive Sites	22.3	(39)	15.1	(47)	17.7	(86)
Variety and Amount of Marine Life	14.3	(25)	14.1	(44)	14.2	(69)
Good Underwater Visibility	12.0	(21)	12.2	(38)	12.1	(59)
No Crowding by Other Divers	9.1	(16)	7.1	(22)	7.8	(38)
Warm Water	5.1	(9)	5.5	(17)	5.3	(26)
Good Weather	5.7	(10)	4.8	(15)	5.1	(25)
Manta Rays	2.3	(4)	6.8	(21)	5.1	(25)
Whale Sharks	1.1	(2)	6.8	(21)	4.7	(23)
Other Sharks	1.1	(2)	3.9	(12)	2.9	(14)
Opportunity to Learn about Marine Environments	.6	(1)	3.2	(10)	2.3	(11)
Good Photo Opportunities	1.1	(2)	2.3	(7)	1.9	(9)
Good Above Water Scenery	1.1	(2)	1.6	(5)	1.4	(7)
Unique Formations	0	(0)	.6	(2)	.4	(2)
Easy Dive Conditions	1.1	(2)	1.3	(4)	1.2	(6)
Total	100%	(175)	100%	(311)	100%	(486)
Non Response		(46)		(47)		(93)

Table 13.0 The Importance of Various Service Features to the Visitors Enjoyment of the Dive Trip (QB10)

Service Features	Overall Results		Response						Mean	SD	Non Respons		
	Not At All		2		3		4					Extremely	
	Important							Important					
n=579	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)			
Accommodation on Boat	2.5	(14)	6.1	(35)	28.7	(164)	45.9	(262)	16.8	(96)	3.7	.91	(8)
Food on Boat	1.0	(6)	6.4	(37)	36.3	(209)	40.9	(235)	15.3	(88)	3.6	.86	(4)
Information Given by Dive Master	0	(0)	1.6	(9)	8.2	(47)	44.2	(254)	46.1	(265)	4.3	.70	(4)
Friendliness of Boat Crew	0	(0)	1.2	(7)	10.6	(61)	54.9	(316)	33.3	(192)	4.2	.67	(3)
Good Safety Procedures on Dive Boat	2	(1)	2	(1)	5.0	(29)	30.3	(174)	64.3	(370)	4.6	.61	(4)
Good Dive Master	.3	(2)	2	(1)	6.4	(37)	31.3	(180)	61.8	(356)	4.6	.66	(3)
Good Dive Buddy	1.2	(7)	1.0	(6)	13.4	(77)	39.7	(228)	44.6	(256)	4.3	.82	(5)
Enjoyable Dive Group	.7	(4)	1.9	(11)	16.1	(92)	51.0	(292)	30.2	(173)	4.1	.77	(7)
High Quality of General Service	2	(1)	.9	(5)	17.6	(101)	48.9	(280)	32.5	(186)	4.1	.73	(6)
Commitment to Environment by Dive Shop and Boat Crew	.5	(3)	1.6	(9)	10.6	(61)	33.0	(190)	54.3	(313)	4.4	.78	(3)
Additional Activities on the Boat	12.1	(68)	20.0	(113)	34.2	(193)	25.4	(143)	8.3	(47)	3.0	1.23	(15)

Table 13.1 The Importance of Various Service Features to the Visitors Enjoyment of the Dive Trip (QB10)

Service Features	Day Trip Results		Response						Mean	SD	Non Respons		
	Not At All		2		3		4					Extremely	
	Important							Important					
n=221	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)			
Accommodation on Boat	5.1	(11)	9.3	(20)	28.8	(62)	46.5	(100)	10.2	(22)	3.8	.98	(6)
Food on Boat	1.8	(4)	11.5	(25)	47.5	(103)	29.0	(63)	10.1	(22)	3.3	.88	(4)
Information Given by Dive Master	0	(0)	.9	(2)	5.5	(12)	41.7	(91)	51.8	(113)	4.4	.64	(3)
Friendliness of Boat Crew	0	(0)	1.8	(4)	11.0	(24)	54.1	(118)	33.0	(72)	4.2	.69	(3)
Good Safety Procedures on Dive Boat	0	(0)	.5	(1)	4.6	(10)	28.9	(63)	66.1	(144)	4.6	.60	(3)
Good Dive Master	0	(0)	0	(0)	4.6	(10)	28.4	(62)	67.0	(146)	4.6	.57	(3)
Good Dive Buddy	.5	(1)	1.4	(3)	14.2	(31)	36.2	(79)	47.7	(104)	4.3	.80	(3)
Enjoyable Dive Group	0	(0)	2.8	(6)	19.9	(43)	49.1	(106)	28.2	(61)	4.0	.77	(5)
High Quality of General Service	0	(0)	1.8	(4)	12.9	(28)	51.2	(111)	34.1	(74)	4.2	.72	(4)
Commitment to Environment by Dive Shop and Boat Crew	.9	(2)	1.4	(3)	10.1	(22)	28.0	(61)	59.6	(130)	4.4	.80	(3)
Additional Activities on the Boat	9.9	(21)	16.4	(35)	34.7	(74)	27.2	(58)	11.7	(25)	3.1	1.13	(8)

Table 13.2 The Importance of Various Service Features to the Visitors Enjoyment of the Dive Trip (QB10)

Service Features	Live Aboard Results		Response						Mean	SD	Non Respons		
	Not At All		2		3		4					Extremely	
	Important							Important					
n=358	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)			
Accommodation on Boat	.8	(3)	4.2	(15)	28.7	(102)	45.5	(162)	20.8	(74)	3.8	.84	(2)
Food on Boat	.6	(2)	3.4	(12)	29.6	(106)	48.0	(172)	18.4	(66)	3.8	.79	(0)
Information Given by Dive Master	0	(0)	2.0	(7)	9.8	(35)	45.7	(163)	42.6	(152)	4.3	.72	(1)
Friendliness of Boat Crew	0	(0)	.8	(3)	10.3	(37)	55.3	(198)	33.5	(120)	4.2	.63	(0)
Good Safety Procedures on Dive Boat	.3	(1)	0	(0)	5.3	(19)	31.1	(111)	63.3	(226)	4.6	.62	(1)
Good Dive Master	.6	(2)	.3	(1)	7.5	(27)	33.0	(118)	58.7	(210)	4.5	.70	(0)
Good Dive Buddy	1.7	(6)	.8	(3)	12.9	(46)	41.9	(149)	42.7	(152)	4.2	.83	(2)
Enjoyable Dive Group	1.1	(4)	1.4	(5)	13.8	(49)	52.2	(186)	31.5	(112)	4.1	.77	(2)
High Quality of General Service	.3	(1)	.3	(1)	20.5	(73)	47.5	(169)	31.5	(112)	4.1	.74	(2)
Commitment to Environment by Dive Shop and Boat Crew	.3	(1)	1.7	(6)	10.9	(39)	36.0	(129)	51.1	(183)	4.4	.76	(0)
Additional Activities on the Boat	13.4	(47)	22.2	(78)	33.9	(119)	24.2	(85)	6.3	(22)	2.9	1.11	(7)

Table 14.0 The Most Important Service Feature (Qb11a)

Service Features	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Good Safety Procedures on Dive Boat	35.4	(62)	32.9	(104)	33.8	(166)
Good Dive Master	27.4	(48)	14.2	(45)	18.9	(93)
Information Given by Dive Master	12.6	(22)	13.0	(41)	12.8	(63)
Commitment to Environment by Dive Shop	9.7	(17)	9.8	(31)	9.8	(48)
High Quality of General Service	4.6	(8)	6.6	(21)	5.9	(29)
Good Dive Buddy	5.1	(9)	6.3	(20)	5.9	(29)
Accommodation on Boat	.6	(1)	7.6	(24)	5.1	(25)
Friendliness of Boat Crew	1.7	(3)	2.8	(9)	2.4	(12)
Enjoyable Dive Group	.6	(1)	3.5	(11)	2.4	(12)
Food on Boat	1.1	(2)	2.5	(8)	2.0	(10)
Additional Activities on the Boat	1.1	(2)	.6	(2)	.8	(4)
Total	100%	(175)	100%	(316)	100%	(491)
Non Response		(46)		(42)		(88)

Table 14.1 The Second Most Important Service Feature (Qb11b)

Service Features	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Good Dive Master	18.7	(31)	18.1	(56)	18.3	(87)
Good Safety Procedures on Dive Boat	18.1	(30)	12.3	(38)	14.3	(68)
Commitment to Environment by Dive Shop	15.7	(26)	13.6	(42)	14.3	(68)
Information Given by Dive Master	13.3	(22)	9.1	(28)	10.5	(50)
High Quality of General Service	8.4	(14)	8.4	(26)	8.4	(40)
Enjoyable Dive Group	6.6	(11)	9.1	(28)	8.2	(39)
Good Dive Buddy	7.2	(12)	6.8	(21)	6.9	(33)
Friendliness of Boat Crew	6.0	(10)	6.5	(20)	6.3	(30)
Accommodation on Boat	2.4	(4)	7.8	(24)	5.9	(28)
Food on Boat	2.4	(4)	6.5	(20)	5.1	(24)
Additional Activities on the Boat	1.2	(2)	1.9	(6)	1.7	(8)
Total	100%	(166)	100%	(309)	100%	(475)
Non Response		(55)		(49)		(104)

Table 16.0 The Extent to Which the Divers Agree with the Potential Impacts of Diving on the Coral Reef (QB12)

Overall Results n=579	Response								Non Response (n)
	Strongly Disagree % (n)	Somewhat Disagree % (n)	Not Sure % (n)	Somewhat Agree % (n)	Strongly Agree % (n)	Mean	SD		
Potential Impacts									
Negative Impact on Fish	13.0 (74)	24.7 (141)	30.4 (173)	26.7 (152)	5.3 (30)	2.9	1.11	(9)	
Negative Impact on Coral	7.4 (42)	16.1 (92)	11.7 (67)	44.8 (256)	20.0 (114)	3.5	1.19	(8)	
Negative Impact on Water Quality	23.7 (137)	29.9 (173)	20.6 (119)	20.2 (117)	4.1 (24)	2.6	1.42	(9)	
Economic Support for Protection of Ree	3.2 (18)	10.8 (61)	28.5 (161)	36.5 (206)	20.9 (118)	3.6	1.03	(15)	
Provides Education to Divers Which Hel Protect the Reef	1.2 (7)	6.0 (34)	15.3 (87)	42.7 (242)	34.7 (197)	4.0	.92	(12)	
Anchor Damage	4.2 (24)	6.0 (34)	21.6 (123)	32.7 (186)	35.5 (202)	3.9	1.09	(10)	
Garbage / Waste	7.4 (42)	8.7 (49)	18.8 (106)	32.0 (181)	33.1 (187)	3.7	1.21	(14)	
Crowding- too many divers causes harm	1.6 (9)	8.8 (50)	14.9 (85)	37.8 (216)	37.0 (211)	4.0	1.01	(8)	
Prevents Fishing Which Helps Protect The Reef	6.3 (33)	11.6 (61)	31.6 (166)	33.3 (175)	17.1 (90)	3.4	1.10	(23)	

Table 16.1 The Extent to Which the Divers Agree with the Potential Impacts of Diving on the Coral Reef (QB12)

Day Trip Results n=221	Response								Non Response (n)
	Strongly Disagree % (n)	Somewhat Disagree % (n)	Not Sure % (n)	Somewhat Agree % (n)	Strongly Agree % (n)	Mean	SD		
Potential Impacts									
Negative Impact on Fish	15.2 (33)	17.1 (37)	32.7 (71)	29.0 (63)	6.0 (13)	2.9	1.14	(4)	
Negative Impact on Coral	9.6 (21)	13.8 (30)	10.6 (23)	46.3 (101)	19.7 (43)	3.5	1.22	(3)	
Negative Impact on Water Quality	23.1 (51)	28.5 (63)	24.9 (55)	17.2 (38)	4.5 (10)	2.6	1.44	(4)	
Economic Support for Protection of Re	2.3 (5)	12.6 (27)	29.9 (64)	32.7 (70)	22.4 (48)	3.6	1.04	(7)	
Provides Education to Divers Which H Protect the Reef	.9 (2)	4.2 (9)	17.1 (37)	40.7 (88)	37.0 (80)	4.1	.89	(5)	
Anchor Damage	4.1 (9)	6.4 (14)	23.9 (52)	26.1 (57)	39.4 (86)	3.9	1.12	(3)	
Garbage / Waste	9.8 (21)	7.4 (16)	17.2 (37)	27.9 (60)	37.7 (81)	3.8	1.30	(6)	
Crowding- too many divers causes har	.9 (2)	11.9 (26)	17.0 (37)	34.4 (75)	35.8 (78)	3.9	1.04	(3)	
Prevents Fishing Which Helps Protect The Reef	6.4 (12)	13.3 (25)	33.0 (62)	33.5 (63)	13.8 (26)	3.4	1.08	(7)	

Table 16.2 The Extent to Which the Divers Agree with the Potential Impacts of Diving on the Coral Reef (QB12)

Live Aboard Results n=358	Response								Non Response (n)
	Strongly Disagree % (n)	Somewhat Disagree % (n)	Not Sure % (n)	Somewhat Agree % (n)	Strongly Agree % (n)	Mean	SD		
Potential Impacts									
Negative Impact on Fish	11.6 (41)	29.5 (104)	28.9 (102)	25.2 (89)	4.8 (17)	2.8	1.08	(5)	
Negative Impact on Coral	5.9 (21)	17.6 (62)	12.5 (44)	43.9 (155)	20.1 (71)	3.5	1.17	(5)	
Negative Impact on Water Quality	24.0 (86)	31.2 (110)	18.1 (64)	22.4 (79)	3.9 (14)	2.6	1.41	(5)	
Economic Support for Protection of Re	3.7 (13)	9.7 (34)	27.7 (97)	38.9 (136)	20.0 (70)	3.6	1.03	(8)	
Provides Education to Divers Which H Protect the Reef	1.4 (5)	7.1 (25)	14.2 (50)	43.9 (154)	33.3 (117)	4.0	.94	(7)	
Anchor Damage	4.3 (15)	5.7 (20)	20.2 (71)	36.8 (129)	33.0 (116)	3.9	1.07	(7)	
Garbage / Waste	6.0 (21)	9.4 (33)	19.7 (69)	34.6 (121)	30.3 (106)	3.7	1.16	(8)	
Crowding- too many divers causes har	2.0 (7)	6.8 (24)	13.6 (48)	39.9 (141)	37.7 (133)	4.0	.98	(5)	
Prevents Fishing Which Helps Protect The Reef*	6.2 (21)	10.7 (36)	30.9 (104)	33.2 (112)	19.0 (64)	3.5	1.10	(16)	

*This question was not present on the original survey. This accounts for the large non-response rate.

Table 16.3 The Extent to Which the Divers Agree with the Potential Impacts of Diving on the Coral Reef (QB12)

n=579 Potential Impacts	Condensed Results		Response				Non Response (n)
	Strongly or Somewhat Disagree		Not Sure	Somewhat or Strongly Agree			
	%	(n)	%	(n)	%		
Negative Impact on Fish	37.7	215	30.4	(173)	31.9	182	(9)
Negative Impact on Coral	23.5	134	11.7	(67)	64.8	370	(8)
Negative Impact on Water Quality	54.4	310	20.6	(119)	24.7	141	(9)
Economic Support for Protection of Reef	14.0	79	28.5	(161)	57.4	324	(15)
Provides Education to Divers Which Helps Protect the Reef	7.2	41	15.3	(87)	77.4	439	(12)
Anchor Damage	10.2	58	21.6	(123)	68.2	388	(10)
Garbage / Waste	16.1	91	18.8	(106)	65.1	368	(14)
Crowding- too many divers causes harm	10.3	59	14.9	(85)	74.8	427	(8)
Prevents Fishing Which Helps Protect The Reef	17.9	94	31.6	(166)	50.5	265	(23)

Table 17.0 Divers View the Impact of Diving on the Reef (QB13)

Impact of Diving	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Very Negative (1)	2.3	(5)	4.3	(15)	3.6	(20)
Somewhat Negative (2)	39.0	(83)	36.8	(127)	37.6	(210)
Not Sure (3)	21.6	(46)	15.7	(54)	17.9	(100)
Somewhat Positive (4)	28.2	(60)	32.2	(111)	30.6	(171)
Very Positive (5)	8.9	(19)	11.0	(38)	10.2	(57)
Total	100%	(213)	100%	(345)	100%	(558)
Mean		3.02		3.08		3.06
SD		1.06		1.10		1.11
No Response		(8)		(13)		(21)

$\chi^2 = 5.484$, $df = 4$, $sig = .241$

Table 17.1 Divers View the Impact of Diving on the Reef (QB13)- Grouped

Impact of Diving	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Negative	41.3	(88)	41.1	(142)	41.2	(230)
Positive	37.1	(79)	43.2	(149)	40.1	(228)
Not Sure	21.6	(46)	15.7	(54)	17.9	(100)
Total	100%	(213)	100%	(345)	100%	(558)
No Response		(8)		(13)		(21)

$\chi^2 = 2.796$, $df = 2$, $sig = .150$

Table 18.0 Interest in Participating in a Reef Monitoring Project Designed to Maintain Environmental Quality and Minimize Visitor Impacts (BQ14)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Yes	60.6	(129)	60.6	(212)	60.6	(341)
No	18.3	(39)	16	(56)	16.9	(95)
Not Sure	21.1	(45)	23.4	(82)	22.6	(127)
Total	100%	(213)	100%	(350)	100%	(563)
No Response		(8)		(8)		(16)

$\chi^2 = .730$, $df = 2$, $sig = .694$

Table 19.0 The Number of Years Since the Divers Became Certified (BQ15)

Years	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Less than 1 Year	15.3	(34)	6.1	(21)	9.7	(55)
2-5 Years	45.0	(100)	42.0	(145)	43.2	(245)
6-10 Years	21.2	(47)	23.5	(81)	22.6	(128)
11-15 Years	9.9	(22)	15.7	(54)	13.4	(76)
16-20 Years	2.3	(5)	5.2	(18)	4.1	(23)
More than 20 Years	6.3	(14)	7.5	(26)	7.1	(40)
Total	100%	n=222	100%	n=345	100%	n=567
Non Response		(8)		(13)		(21)
Mean		6.29 years		8.28 years		7.50 years
Median		4 years		6 years		5 years
SD		6.12		7.17		

$\chi^2 = 19.002$, $df = 5$, $sig = .002$

Table 19.1 The Number of Years Since the Divers Became Certified (BQ15) (Re-grouped)

Years	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
3 years or less	41.9	(93)	26.1	(90)	32.3	(183)
4-5 years	18.5	(41)	22.3	(77)	20.8	(118)
6-9 years	20.7	(46)	20.9	(72)	20.8	(118)
10 or more years	18.9	(42)	30.7	(106)	26.1	(148)
Total	100%	n=222	100%	n=345	100%	n=567
Non Response		(8)		(13)		(21)

Table 20.0 Scuba Diving Courses Taken by the Survey Respondents (BQ16)*

Diving Course	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Open Water	89.1	(205)	88.8	(318)	88.9	(523)
Advanced Open Water	46.5	(107)	62.3	(223)	56.1	(330)
Rescue Diver	18.3	(42)	26.8	(96)	23.5	(138)
Dive Master	10.0	(23)	16.2	(58)	13.8	(81)
Instructor	5.7	(13)	7.3	(26)	6.6	(39)
Other Dive Course	17.8	(41)	21.2	(76)	19.9	(117)
Total**		n=230		n=358		n=588

*It is assumed that divers have taken the necessary prerequisites for the upper level dive courses.

**Totals do not equal 100% due to multiple response.

Table 21.0 The Number of Dives Completed in the Last Two Years (BQ17)

Number of Dives	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Zero	13.1	(30)	6.4	(23)	9.0	(53)
1-5 Dives	10.9	(25)	5.6	(20)	7.7	(45)
6-15 Dives	26.6	(61)	10.3	(37)	16.7	(98)
16-25 Dives	7.9	(18)	11.7	(42)	10.2	(60)
26-35 Dives	7.4	(17)	11.2	(40)	9.7	(57)
More than 35 Dives	34.1	(78)	54.7	(196)	46.7	(274)
Total	100%	n=229	100%	n=358	100%	n=587
No Response		(1)		(0)		(1)

$\chi^2 = 51.178$, $df = 5$, $sig = .000$

Table 22.0 Do the Divers own ANY Scuba Equipment? (BQ18)

Own Gear?	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Yes	81.7	(188)	92.2	(330)	88.1	(518)
Did not Indicate	18.3	(42)	7.8	(28)	11.9	(70)
Total	100%	n=230	100%	n=358	100%	n=588

$\chi^2 = 14.552$, $df = 1$, $sig = .000$

Table 23.0 Scuba Gear Owned by the Survey Respondents (BQ18)

Dive Gear	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Mask/Snorkle/Fins	79.6	(183)	91.3	(327)	86.7	(510)
Regulator/Guages	46.5	(107)	72.3	(259)	62.2	(366)
BCD	47.4	(109)	71.5	(256)	62.1	(365)
Flashlight	33.5	(77)	64.8	(232)	52.6	(309)
Divers Knife	43.5	(100)	61.5	(220)	54.4	(320)
Compass	43.5	(100)	60.9	(218)	54.1	(318)
Speargun	1.7	(4)	3.9	(14)	3.1	(18)
Dive Computer	45.2	(104)	70.4	(252)	60.5	(356)
Still Camera	15.2	(35)	30.7	(110)	24.7	(145)
Video Camera	2.6	(6)	6.7	(24)	5.1	(30)
Coral Field Guide	18.3	(42)	27.7	(99)	24.0	(141)
Fish Field Guide	30.4	(70)	43.6	(156)	38.4	(226)
Dive Gloves	37.8	(14)	30.2	(75)	31.2	(89)
Total*		n=230		n=388		n=588

*Totals do not equal 100% due to multiple response.

Table 24.0 Total Value of Scuba Gear Owned by the Survey Respondents (BQ19) (US \$)

Value	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
\$1-\$250	22.8	(36)	15.0	(40)	17.9	(76)
\$251-\$1000	27.2	(43)	15.0	(40)	19.5	(83)
\$1001-\$2000	28.5	(45)	27.7	(74)	28.0	(119)
\$2001-\$3000	10.8	(17)	17.2	(46)	14.8	(63)
\$3001-\$4000	5.1	(8)	6.0	(16)	5.6	(24)
\$4001-\$5000	2.5	(4)	7.5	(20)	5.6	(24)
\$5001-\$10000	2.5	(4)	9.0	(24)	6.6	(28)
\$10001 +	.6	(1)	2.6	(7)	1.9	(8)
Total	100%	n=158	100%	n=267	100%	n=425
Mean	\$1599		\$2824		\$2369	
Median	\$1100		\$2000		\$1600	
SD	\$1766		\$3329		\$2908	

Table 24.1 Total Value of Dive Computer (BQ19) (US \$)

Value	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
\$1-\$200	12.7	(9)	10.8	(24)	11.3	(33)
\$201-\$400	54.9	(39)	32.4	(72)	37.9	(111)
\$401-\$600	21.1	(15)	27	(60)	25.6	(75)
\$601-\$800	8.5	(6)	6.8	(15)	7.2	(21)
\$801+	2.8	(2)	23	(51)	18.1	(53)
Total	100%	n=71	100%	n=222	100%	n=293
Mean	\$409		\$454		\$441	
Median	\$400		\$400		\$400	
SD	\$189		\$213		\$207	

Table 24.2 Total Value Underwater Camera (BQ19) (US \$)

Value	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
\$1-\$500	50	(11)	18.3	(22)	23.2	(33)
\$501-\$1000	27.3	(6)	53.3	(64)	49.3	(70)
\$1001-\$2000	13.6	(3)	13.3	(16)	13.4	(19)
\$2001-\$3000	9.1	(2)	4.2	(5)	4.9	(7)
\$3001-\$4000	0	(0)	6.7	(8)	5.6	(8)
\$4001 +	0	(0)	4.2	(5)	3.5	(5)
Total	100%	n=22	100%	n=120	100%	n=142
Mean	\$875		\$1914		\$1673	
Median	\$600		\$1000		\$800	
SD	\$802		\$2275		\$2074	

Table 24.3 Total Value of Video Camera (BQ19) (US \$)

Value	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
\$1- \$2000	33.3	(1)	18.2	(2)	21.4	(3)
\$2001- \$4000	66.7	(2)	54.5	(6)	57.1	(8)
\$4001 +	0	(0)	27.3	(3)	21.4	(3)
Total	100%	n=3	100%	n=11	100%	n=14
Mean	\$3000		\$3890		\$3700	
Median	\$3000		\$3000		\$3000	
SD	\$1000		\$2744		\$2467	

Table 25.0 Divers involvement in a Dive Club in Their Home Country (BQ20)

Dive Club Member	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Yes	21.7	(50)	33.5	(120)	28.9	(170)
No	78.3	(180)	66.5	(238)	71.1	(418)
Total	100%	n=230	100%	n=358	100%	n=588

$\chi^2 = 9.456$, $df = 1$, $sig = .002$

Table 26.0 Number of Days Spent in Thailand (QB21)

Number of Days	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
1-5 days	6.5	(15)	1.1	(4)	3.2	(19)
6-10 days	14.8	(34)	24.3	(87)	20.6	(121)
11-15 days	28.3	(65)	33.2	(119)	31.3	(184)
16-20 days	7.8	(18)	10.6	(38)	9.5	(56)
21-25 days	20.0	(46)	9.2	(33)	13.4	(79)
26-30 days	7.0	(16)	7.8	(28)	7.5	(44)
31-50 days	2.2	(5)	5.6	(20)	4.3	(25)
51-70 days	3.9	(9)	2.5	(9)	3.1	(18)
71+ days	9.6	(22)	5.6	(20)	7.1	(42)
Total	100%	n=220	100%	n=345	100%	n=565
Non Response		(10)		(13)		(23)
Mean		24.3		19		21.2
Median		15		14		14
SD		31.82 days		17.81 days		24.33 days

Table 27.0 Total Number of Days Away From Home (QB22)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
1-5 days	3.0	(7)	.6	(2)	1.5	(9)
6-10 days	12.2	(28)	18.4	(66)	16.0	(94)
11-15 days	15.7	(36)	21.8	(78)	19.4	(114)
16-20 days	13.0	(30)	17.0	(61)	15.5	(91)
21-25 days	16.5	(38)	13.4	(48)	14.6	(86)
26-30 days	9.6	(22)	5.9	(21)	7.3	(43)
31-50 days	1.7	(4)	6.7	(24)	4.8	(28)
51-100 days	18.3	(42)	10.1	(36)	13.3	(78)
101-200 days	6.1	(14)	2.5	(9)	3.9	(23)
201-300 days	.4	(1)	1.1	(4)	.9	(5)
301+ days	3.5	(8)	2.5	(9)	2.9	(17)
Total	100%	n=200	100%	n=336	100%	536
Non Response		(30)		(22)		(52)
Mean		47.5		36.8		40.8
Median		20		16		17
SD		85.83 days		70.46 days		76.65 days

Table 28.0 Previous Dive Holiday/ Scuba Diving Locations (QB23)

Dive Locations	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Australia/New Zealand	18.7	(46)	22.8	(88)	21.2	(134)
South Pacific	15.9	(39)	21.0	(81)	19.0	(120)
North America	16.3	(40)	21.2	(82)	19.3	(122)
Caribbean	34.6	(85)	36.0	(139)	35.4	(224)
Mediterranean	28.5	(70)	26.2	(101)	27.1	(171)
South America	1.6	(4)	9.1	(35)	6.2	(39)
Indian Ocean	20.7	(51)	33.2	(128)	28.3	(179)
Elsewhere in SE Asia	26.0	(64)	38.9	(150)	33.9	(214)
Red Sea	31.7	(78)	28.2	(109)	29.6	(187)
Other	21.5	(53)	32.1	(124)	28.0	(177)
Total*		n=230		n=358		n=588

*Totals do not equal 100% due to multiple response.

Table 29.0 Most Frequent Diving Location (QB24)

Dive Locations	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Australia/New Zealand	5.9	(9)	3.9	(10)	4.7	(19)
South Pacific	2.0	(3)	1.6	(4)	1.7	(7)
North America	7.2	(11)	5.1	(13)	5.9	(24)
Caribbean	7.2	(11)	9.0	(23)	8.3	(34)
Mediterranean	2.0	(3)	3.9	(10)	3.2	(13)
South America	.7	(1)	0	(0)	.2	(1)
Indian Ocean	5.9	(9)	4.3	(11)	4.9	(20)
Elsewhere in SE Asia	34.2	(52)	29.7	(76)	31.4	(128)
Red Sea	15.8	(24)	9.8	(25)	12.0	(49)
Other	19.1	(29)	32.8	(84)	27.7	(113)
Total		n=152		n=256		n=408
Non Response		(78)		(102)		(180)

*Totals do not equal 100% due to multiple response.

Table 29.1 Most Frequent Diving Location (QB24)- Ordered

Dive Locations	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Elsewhere in SE Asia	34.2	(52)	29.7	(76)	31.4	(128)
Other	19.1	(29)	32.8	(84)	27.7	(113)
Red Sea	15.8	(24)	9.8	(25)	12.0	(49)
Caribbean	7.2	(11)	9.0	(23)	8.3	(34)
North America	7.2	(11)	5.1	(13)	5.9	(24)
Indian Ocean	5.9	(9)	4.3	(11)	4.9	(20)
Australia/New Zealand	5.9	(9)	3.9	(10)	4.7	(19)
Mediterranean	2.0	(3)	3.9	(10)	3.2	(13)
South Pacific	2.0	(3)	1.6	(4)	1.7	(7)
South America	.7	(1)	0	(0)	.2	(1)
Total		n=152		n=256		n=408
Non Response		(78)		(102)		(180)

Table 30.0 Dive Magazine Subscription (BQ25)

Subscribe to Dive Magazine	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Yes	25.2	(58)	36.9	(132)	32.3	(190)
No	74.2	(172)	63.1	(226)	67.7	(398)
Total	100%	n=230	100%	n=358	100%	n=588

$\chi^2 = 8.696$, $df = 1$, $sig = .003$

Table 31.0 Familiar With Project AWARE? (BQ26)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Yes	42.7	(94)	37.1	(131)	39.3	(225)
No	57.3	(126)	62.9	(222)	60.7	(348)
Total	100%	n=220	100%	n=353	100%	n=573
Non Response		(10)		(5)		(15)

$\chi^2 = 1.793$, $df = 1$, $sig = .181$

Table 32.0 Donate to Project AWARE? (BQ27)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Yes	21.3	(46)	17.3	(61)	18.8	(107)
No	78.7	(170)	82.7	(292)	81.2	(462)
Total	100%	n=216	100%	n=353	100%	n=569
Non Response		(14)		(5)		(19)

$\chi^2 = 1.415$, $df = 1$, $sig = .234$

Table 33.0 Cost of Dive Trip (QB28)

Response (SUS)	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
\$1-\$200	26.1	(46)	0	(0)	10.4	(46)
\$201-\$600	43.8	(77)	28.9	(79)	35.4	(156)
\$601-\$1000	15.9	(28)	35.1	(93)	27.4	(121)
\$1001-\$1400	4.0	(7)	10.2	(27)	7.7	(34)
\$1401-\$1800	2.8	(5)	14.0	(37)	9.5	(42)
\$1801 +	7.4	(13)	10.9	(29)	9.5	(42)
Total	100%	n=175	100%	n=265	100%	n=441
Non Response		(54)		(93)		(147)
Mean		\$715		\$1079		\$934
SD		\$1062		\$733		\$897

Table 33.1 Cost of Food (QB28)

Response (SUS)	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
\$1-\$100	16.0	(26)	28.3	(68)	23.3	(94)
\$101-\$200	20.2	(33)	28.8	(69)	25.3	(102)
\$201-\$300	17.2	(28)	15.4	(37)	16.1	(65)
\$301-\$400	12.9	(21)	9.2	(22)	10.7	(43)
\$401-\$500	14.7	(24)	10.8	(26)	12.4	(50)
\$501-\$1000	18.4	(30)	5.8	(14)	10.9	(44)
\$1001 +	.6	(1)	1.7	(4)	1.2	(5)
Total	100%	n=163	100%	n=240	100%	n=403
Non Response		(67)		(118)		(185)
Mean		\$390		\$279		\$324
SD		\$289		\$255		\$275

Table 33.2 Cost of Accommodation (QB28)

Response (SUS)	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
\$1-\$200	20.0	(32)	34.8	(78)	28.6	(110)
\$201-\$400	26.9	(43)	30.8	(69)	29.2	(112)
\$401-\$600	14.4	(23)	14.3	(32)	14.3	(55)
\$601-\$800	6.3	(10)	4.0	(9)	4.9	(19)
\$801-\$1000	11.3	(18)	9.8	(22)	10.4	(40)
\$1001-\$2000	18.1	(29)	5.4	(12)	10.7	(41)
\$2001 +	3.1	(5)	.9	(2)	1.8	(7)
Total	100%	n=160	100%	n=224	100%	n=384
Non Response		(70)		(134)		(204)
Mean		\$795		\$474		\$608
SD		\$914		\$527		\$730

Table 33.3 Cost of Travel Within Thailand (QB28)

Response (SUS)	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
\$1-\$100	34.1	(45)	34.7	(61)	34.4	(106)
\$101-\$200	31.1	(41)	31.8	(56)	31.5	(97)
\$201-\$300	8.3	(11)	13.6	(24)	11.4	(35)
\$301-\$400	2.3	(3)	4.0	(7)	3.2	(10)
\$401-\$500	10.6	(14)	7.4	(13)	8.8	(27)
\$501-\$600	3.0	(4)	4.0	(7)	3.6	(11)
\$601 +	10.6	(14)	4.5	(8)	7.1	(22)
Total	100%	n=132	100%	n=176	100%	n=308
Non Response		(98)		(182)		(280)
Mean		\$309		\$234		\$266
SD		\$384		\$198		\$295

Table 33.4 Cost of Entertainment and Souvenirs in Thailand (QB28)

Response (SUS)	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
\$1-\$100	35.4	(46)	47.7	(94)	42.8	(140)
\$101-\$200	17.7	(23)	20.8	(41)	19.6	(64)
\$201-\$300	15.4	(20)	11.7	(23)	13.1	(43)
\$301-\$400	6.2	(8)	5.6	(11)	5.8	(19)
\$401-\$500	14.6	(19)	5.1	(10)	8.9	(29)
\$501+	10.8	(14)	5.1	(18)	9.8	(32)
Total	100%	n=130	100%	n=197	100%	n=327
Non Response		(100)		(161)		(261)
Mean		\$385		\$260		\$310
SD		\$650		\$364		\$501

Table 33.5 Cost of Other Expenses (QB28)

Response (SUS)	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
\$1-\$100	48.9	(23)	50.8	(30)	50.0	(53)
\$101-\$200	10.6	(5)	22.0	(13)	17.0	(18)
\$201-\$300	19.1	(9)	1.7	(1)	9.4	(10)
\$301-\$400	2.1	(1)	1.7	(1)	1.9	(2)
\$401-\$500	2.1	(1)	13.6	(8)	8.5	(9)
\$501 +	17.0	(8)	10.2	(6)	13.2	(14)
Total	100%	n=47	100%	n=59	100%	n=106
Non Response		(183)		(299)		(482)
Mean		\$317		\$266		\$289
SD		\$385		\$295		\$337

Table 33.6 Total Amount Spent While in Thailand (QB28)*

Response (SUS)	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
\$1-\$1000	18.0	(31)	13.2	(35)	15.1	(66)
\$1001-\$2000	41.9	(72)	43.0	(114)	42.6	(186)
\$2001-\$3000	19.2	(33)	23.8	(63)	22.0	(96)
\$3001-\$4000	7.0	(12)	11.3	(30)	9.6	(42)
\$4001-\$5000	5.8	(10)	4.5	(12)	5.0	(22)
\$5001-\$6000	4.1	(7)	1.5	(4)	2.5	(11)
\$6001 +	4.1	(7)	2.6	(7)	3.2	(14)
Total	100%	n=172	100%	n=265	100%	n=437
Non Response		(58)		(93)		(151)
Mean		\$2448		\$2252		\$2329
SD		\$2335		2252.5		\$1803

*many individuals provided a total amount spent while in Thailand but did not break this amount into the suggested categories. These total amounts are included here.

Table 34.0 Gender (QB29)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Male	65.6	(149)	62.5	(233)	63.7	(372)
Female	34.4	(78)	37.5	(134)	36.3	(212)
Total	100%	n=227	100%	n=357	100%	n=584
Non Response		(3)		(1)		(4)

$\chi^2 = .604$, $df = 1$, $sig = .437$

Table 35.0 Marital Status (QB29b)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Married	36.6	(83)	34.5	(123)	35.3	(206)
Unmarried	63.4	(144)	65.5	(234)	64.7	(378)
Total	100%	n=227	100%	n=357	100%	n=584
Non Response		(3)		(1)		(4)

$\chi^2 = .271$, $df = 1$, $sig = .603$

Table 38.0 Highest Level of Education (QB32)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Grade/Primary School	4.9	(11)	4.5	(16)	4.6	(27)
High School	27.2	(61)	15.7	(56)	20.1	(117)
College / University	26.3	(59)	23.5	(84)	24.6	(143)
Bachelors Degree	25.9	(58)	25.2	(90)	25.5	(148)
Masters Degree	12.1	(27)	21.6	(77)	17.9	(104)
Doctoral Degree	3.1	(7)	5.9	(21)	4.8	(28)
Other	.4	(1)	3.6	(13)	2.1	(14)
Total	100%	n=224	100%	n=357	100%	n=581
Non Response		(6)		(1)		(7)

$\chi^2 = 24.596$, $df = 6$, $sig = .000$

Table 39.0 Age (QB33)

Age	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Under 25 years	12.4	(28)	6.4	(23)	8.7	(41)
26-35 years	45.6	(103)	40.5	(145)	42.5	(248)
36-45 years	33.6	(76)	31	(111)	32	(187)
46-55 years	6.2	(14)	17.9	(64)	13.4	(78)
56-65 years	2.2	(5)	3.4	(12)	2.9	(17)
Over 65 years	0	(0)	.8	(3)	.5	(3)
Total	100%	n=226	100%	n=358	100%	n=584
Non Response		(4)		(0)		(4)

$\chi^2 = 23.450$, $df = 5$, $sig = .000$

Table 37.0 Who did you come on this dive trip with? (QB34)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Alone	30.3	(43)	22.3	(73)	24.7	(116)
Family	33.8	(48)	25.6	(84)	28.1	(132)
Friends	34.5	(49)	44.2	(145)	41.3	(194)
Other	1.4	(2)	7.9	(26)	6.0	(28)
Total	100%		100%		100%	

chi²= 14.282, df=3 , sig=.003

Table 36.0 Nationality (QB30)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Middle East	0.4	1	.8	3	0.68	4
Africa	0	0	.3	1	0.17	1
South America	0.4	1	0	0	0.17	1
Russia	1.3	3	.3	1	0.68	4
North America	13.2	30	17.1	61	15.58	91
Australia/NZ	5.7	13	1.7	6	3.25	19
East Asia	8.8	20	12.3	44	10.95	64
South East Asia	4.0	9	5.3	19	4.79	28
Central Asia	0.4	1	0	0	0.17	1
Scandinavian Countries	11.5	26	20.2	72	16.78	98
Britian	7.9	18	9.8	35	9.07	53
Europe	46.3	105	32.2	115	37.67	220

Table 36.1 Country of Residence (QB31)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Middle East	2.6	6	3	.8	1.54	9
Africa	0	0	2	.6	0.34	2
South America	0.4	1	0	0	0.17	1
Russia	1.3	3	1	.3	0.68	4
North America	11.9	27	59	16.5	14.72	86
Australia/NZ	5.7	13	6	1.7	3.25	19
East Asia	11.5	26	48	13.4	12.67	74
South East Asia	11.9	27	23	6.4	8.56	50
Scandinavian Countries	12.3	28	71	19.9	16.95	99
Britian	4.8	11	34	9.5	7.7	45
Europe	37.4	85	110	30.8	33.39	195

Post Dive Survey Results

Table 40.0 Overall Satisfaction With Dive Trip (QA1)

Rating	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
1- Very Unsatisfied	0	(0)	0	(0)	0	(0)
2	1.9	(4)	0	(0)	.8	(4)
3	1.4	(3)	0	(0)	.6	(3)
4	4.2	(9)	1.1	(3)	2.4	(12)
5	5.6	(12)	2.5	(7)	3.9	(19)
6	7	(15)	3.2	(9)	4.9	(24)
7	19.2	(41)	13.3	(37)	15.9	(78)
8	29.6	(63)	35.1	(98)	32.7	(161)
9	21.1	(45)	28.3	(79)	25.2	(124)
10- Very Satisfied	9.9	(21)	16.5	(46)	13.6	(67)
Total	100%	n=213	100%	n=279	100%	n=492
Non Response		(8)		(25)		(33)
Mean	7.55		8.29		7.97	
SD	1.76		1.23		1.53	

$\chi^2=30.984$, $df=8$, $sig=.000$

Table 41.0 Rating of this experience compared to expectations (QA2)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Much Worse	1.8	(4)	1	(3)	1.3	(7)
Worse	12.7	(28)	8	(24)	10	(52)
About the Same	43	(95)	48.2	(145)	46	(240)
Better	34.4	(76)	28.6	(86)	31	(162)
Much Better	8.1	(18)	14.3	(43)	11.7	(61)
Total	100%	n=221	100%	n=301	100%	n=522
Non Response		(0)		(4)		(4)
Mean	3.34		3.47		3.41	
SD	.87		.87		.87	

$\chi^2=9.698$, $df=4$, $sig=.046$

Table 41.1 Rating of this experience compared to expectations (QA2)-grouped

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Worse	14.5		9.0		11.3	
About the Same	43.0		48.2		46.0	
Better	42.5		42.9		47.2	
Total	100%	n=221	100%	n=301	100%	n=522

$\chi^2=4.171$, $df=2$, $sig=.124$

Table 42.0 Rating of this experience compared to previous diving experiences (QA3)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Much Worse	2.8	(6)	.3	(1)	1.4	(7)
Worse	17.8	(38)	10.4	(30)	13.5	(68)
About the Same	39.7	(85)	39.8	(115)	39.8	(200)
Better	30.8	(66)	36.7	(106)	34.2	(172)
Much Better	8.9	(19)	12.8	(37)	11.1	(56)
Total	100%	n=214	100%	n=289	100%	n=503
Non Response		(7)		(16)		(23)
Mean	3.25		3.51		3.40	
SD	.95		.86		.90	

$\chi^2=13.211$, $df=4$, $sig=.010$

Table 42.1 Rating of this experience compared to previous diving experiences (QA3)-grouped

Response	Response				Total	
	Day Trip		Live Aboard		%	(n)
	%	(n)	%	(n)	%	(n)
Worse	20.6		10.7		14.9	
About the Same	39.7		39.8		39.8	
Better	39.7		49.5		45.3	
Total	100%	n=214	100%	n=289	100%	n=503

$\chi^2=10.560$, $df=2$, $sig=.005$

Table 43.0 Number of dives on this dive trip (QA4)

Response	Response				Total	
	Day Trip		Live Aboard		%	(n)
	%	(n)	%	(n)	%	(n)
1-5 dives	91.5	(195)	.7	(2)	37.8	(197)
6-10 dives	4.7	(10)	11.8	(35)	8.8	(45)
11-15 dives	2.8	(6)	41.6	(123)	25.3	(129)
16-20 dives	.5	(1)	20.9	(62)	12.4	(63)
21-25 dives	.5	(1)	13.5	(40)	8.1	(41)
26-30 dives	0	(0)	7.4	(22)	4.3	(22)
31+ dives	0	(0)	4.1	(12)	2.4	(12)
Total	100%	n=213	100%	n=296	100%	n=509
Non Response		(8)		(9)		(17)
Mean	3.1		17.1		11.2	
SD	2.8		6.65		8.74	

Table 44.0 Dive sites visited on this trip (QA4b)

Response	Response			
	Day Trip		Live Aboard	
	%	(n)	%	(n)
Similan Islands			93.8	(286)
Koh Bon			66.8	(203)
Koh Tachai			68.3	(207)
Richelieu Rock			86.6	(264)
Surin			20.7	(63)
Burma			19.8	(60)
Hin Daeng			9.2	(28)
Phi Phi	8.9	(22)	2.0	(6)
Racha Yai	27.2	(67)		
King Cruiser	32.5	(80)		
Anemone Reef	24.4	(60)		
Shark Point	36.2	(89)		
Racha Noi	4.1	(10)		
Koh Dok Mai	21.5	(53)		
Total		n=221		n=305

Table 45.0 Satisfaction With the Opportunities Provided on This Dive Trip (QA7)- Overall Results

n=525	Response												
	Very Unsatisfied		Unsatisfied		Neutral		Somewhat Satisfied		Very Satisfied		Mean	SD	Non Response
	1	2	3	4	5								
%	(n)	%	(n)	%	(n)	%	(n)	%	(n)			(n)	
Motivation for Diving													
Interest in Marine Flora and Fauna	1.1	(6)	5.7	(30)	12.3	(64)	38.5	(201)	42.3	(221)	4.2	.93	(3)
Wilderness / Nature Experience	1.9	(10)	3.9	(20)	25.2	(130)	41.0	(211)	28.0	(144)	3.9	.92	(10)
Looking for Adventure	.8	(4)	3.9	(20)	52.2	(269)	31.8	(164)	11.3	(58)	3.5	.78	(10)
Interest in Underwater Photography	4.1	(20)	5.6	(27)	60.1	(292)	16.5	(80)	13.8	(67)	3.3	.92	(39)
Interest in Special Underwater Feature	1.8	(9)	4.6	(23)	60.2	(298)	21.8	(108)	11.5	(57)	3.4	.82	(30)
To Explore New Environments	0	(0)	2.3	(12)	30.9	(160)	41.4	(214)	25.3	(131)	3.9	.80	(8)
To Expand My Knowledge	.4	(2)	1.9	(10)	33.9	(176)	37.6	(195)	26.2	(136)	3.9	.84	(6)
To Develop My Diving Skills	.8	(4)	1.7	(9)	39.6	(204)	33.2	(171)	24.7	(127)	3.8	.86	(10)
To Challenge My Diving Skills	1.4	(7)	2.1	(11)	55.3	(285)	24.7	(127)	16.5	(85)	3.5	.84	(10)
Image of the Sport (glamor,adventure)	2.8	(14)	5.1	(26)	61.9	(315)	19.4	(99)	10.8	(55)	3.3	.84	(16)
To Be With Friends/Family/Associates	1.5	(8)	3.1	(16)	38.4	(199)	32.6	(169)	24.3	(126)	3.8	.91	(7)
Escape the Demands of Everyday Life	1.0	(5)	1.0	(5)	25.8	(133)	31.6	(163)	40.7	(210)	4.1	.88	(9)
Social Activity	1.4	(7)	1.8	(9)	42.9	(220)	34.1	(175)	19.9	(102)	3.7	.85	(12)
Exercise	1.8	(9)	2.7	(14)	50.6	(259)	31.4	(161)	13.5	(69)	3.5	.83	(13)

Table 45.1 Satisfaction With the Opportunities Provided on This Dive Trip (QA7)- Day Trip Results

n=221	Response												
	Very Unsatisfied		Unsatisfied		Neutral		Somewhat Satisfied		Very Satisfied		Mean	SD	Non Response
	1	2	3	4	5								
%	(n)	%	(n)	%	(n)	%	(n)	%	(n)			(n)	
Motivation for Diving													
Interest in Marine Flora and Fauna	.9	(2)	4.5	(10)	16.4	(36)	44.1	(97)	34.1	(75)	4.1	.88	(1)
Wilderness / Nature Experience	3.2	(7)	4.2	(9)	26.9	(58)	42.1	(91)	23.6	(51)	3.8	.96	(5)
Looking for Adventure	.5	(1)	5.6	(12)	52.1	(112)	32.1	(69)	9.8	(21)	3.5	.77	(6)
Interest in Underwater Photography	5.6	(11)	8.1	(16)	62.4	(123)	19.3	(38)	4.6	(9)	3.1	.82	(24)
Interest in Special Underwater Feature	2.4	(5)	6.3	(13)	64.3	(133)	19.3	(40)	7.7	(6)	3.2	.78	(14)
To Explore New Environments	0	(0)	2.8	(6)	36.1	(78)	38.4	(83)	22.7	(49)	3.8	.82	(5)
To Expand My Knowledge	0	(0)	1.8	(4)	39.4	(86)	39.4	(86)	19.3	(42)	3.8	.78	(3)
To Develop My Diving Skills	.9	(2)	.9	(2)	39.3	(84)	36.9	(79)	22.0	(47)	3.8	.83	(7)
To Challenge My Diving Skills	.9	(2)	2.3	(5)	58.4	(125)	23.4	(50)	15.0	(32)	3.5	.81	(7)
Image of the Sport (glamor,adventure)	2.4	(5)	6.6	(14)	59.4	(126)	20.3	(43)	11.3	(24)	3.3	.85	(9)
To Be With Friends/Family/Associates	1.4	(3)	6.0	(13)	42.9	(93)	32.7	(71)	17.1	(37)	3.6	.89	(4)
Escape the Demands of Everyday Life	1.4	(3)	1.4	(3)	32.6	(70)	28.8	(62)	35.8	(77)	4	.93	(6)
Social Activity	.9	(2)	3.3	(7)	45.3	(96)	33.0	(70)	17.5	(37)	3.6	.85	(9)
Exercise	.50	(1)	2.4	(5)	51.9	(110)	32.1	(68)	13.2	(28)	3.6	.77	(2)

Table 45.2 Satisfaction With the Opportunities Provided on This Dive Trip (QA7)- Live Aboard Results

n=304	Response												
	Very Unsatisfied		Unsatisfied		Neutral		Somewhat Satisfied		Very Satisfied		Mean	SD	Non Response
	1	2	3	4	5								
%	(n)	%	(n)	%	(n)	%	(n)	%	(n)			(n)	
Motivation for Diving													
Interest in Marine Flora and Fauna	1.3	(4)	6.6	(20)	9.3	(28)	34.4	(104)	48.3	(146)	4.2	.96	(2)
Wilderness / Nature Experience	1.0	(3)	3.7	(11)	24.1	(72)	40.1	(120)	31.1	(93)	4.0	.89	(5)
Looking for Adventure	1.0	(3)	2.7	(8)	52.3	(157)	31.7	(95)	12.3	(37)	3.5	.78	(4)
Interest in Underwater Photography	3.1	(9)	3.8	(11)	58.5	(169)	14.5	(42)	20.1	(58)	3.4	.96	(15)
Interest in Special Underwater Feature	1.4	(4)	3.5	(10)	57.3	(165)	23.6	(68)	14.2	(41)	3.5	.83	(16)
To Explore New Environments	0	(0)	2.0	(6)	27.2	(82)	43.5	(131)	27.2	(82)	4.0	.79	(3)
To Expand My Knowledge	.7	(2)	2.0	(6)	29.9	(90)	36.2	(109)	31.2	(94)	4.0	.87	(3)
To Develop My Diving Skills	.7	(2)	2.3	(7)	39.9	(120)	30.6	(92)	26.6	(80)	3.8	.88	(3)
To Challenge My Diving Skills	1.7	(5)	2.0	(6)	53.2	(160)	25.6	(77)	17.6	(53)	3.6	.86	(3)
Image of the Sport (glamor,adventure)	3.0	(9)	4.0	(12)	63.6	(189)	18.9	(56)	10.4	(31)	3.3	.83	(7)
To Be With Friends/Family/Associates	1.7	(5)	1.0	(3)	35.2	(106)	32.6	(98)	29.6	(89)	3.9	.91	(3)
Escape the Demands of Everyday Life	.7	(2)	.7	(2)	20.9	(63)	33.6	(101)	44.2	(133)	4.2	.84	(3)
Social Activity	1.7	(5)	.7	(2)	41.2	(124)	34.9	(105)	21.6	(65)	3.7	.86	(3)
Exercise	2.7	(8)	3.0	(9)	49.7	(149)	31.0	(93)	13.7	(41)	3.5	.86	(4)

Table 46.0 Satisfaction With Environmental and Setting Features on the Dive Trip (QA9)-Overall Results

Environment / Setting Features	Response					Mean	SD	Non Response (n)					
	Very Unsatisfied		Neutral		Somewhat Satisfied								
	%	(n)	%	(n)	%				(n)				
Good Weather	.6	(3)	5.4	(28)	9.6	(50)	28.3	(148)	56.2	(294)	4.3	.90	(3)
Warm Water	.2	(1)	1.1	(6)	6.1	(32)	22.2	(116)	70.4	(368)	4.6	.67	(2)
Good Underwater Visibility	1.1	(6)	15.1	(79)	21.8	(114)	42.4	(222)	19.7	(103)	3.6	1.00	(2)
Variety and Amount of Marine Life	1.7	(9)	6.3	(33)	13.6	(71)	42.5	(222)	35.8	(187)	4.0	.95	(4)
Clear, Unpolluted Dive Sites	2.1	(11)	7.6	(40)	19.9	(104)	44.0	(230)	26.4	(138)	3.8	.97	(3)
Undamaged Dive Sites	5.4	(28)	8.3	(43)	24.7	(128)	40.8	(212)	20.8	(108)	3.6	1.07	(7)
Easy Dive Conditions	.6	(3)	2.7	(14)	30.8	(161)	41.1	(215)	24.9	(130)	3.9	.84	(3)
No Crowding by Other Divers	8.0	(42)	18.9	(99)	27.2	(142)	31.2	(163)	14.7	(77)	3.2	1.16	(3)
Good Above Water Scenery	.2	(1)	1.0	(5)	24.2	(126)	38.8	(202)	35.8	(186)	4.1	.81	(6)
Unique Formations	.4	(2)	2.1	(11)	32.3	(168)	40.6	(211)	24.6	(128)	3.9	.82	(6)
Whale Sharks	60.2	(313)	13.7	(71)	17.1	(89)	1.7	(9)	7.3	(38)	1.8	1.21	(6)
Other Sharks	29.8	(155)	17.5	(91)	23.1	(120)	17.9	(93)	11.7	(61)	2.6	1.38	(6)
Manta Rays	42.4	(222)	10.3	(54)	16.6	(87)	10.1	(53)	10.6	(108)	2.6	1.59	(2)
Turtles	37.8	(198)	15.5	(81)	22.7	(119)	14.3	(75)	9.7	(51)	2.4	1.37	(2)
Good Photo Opportunities	7.9	(40)	4.8	(24)	53.7	(271)	20.6	(104)	13.1	(66)	3.3	1.01	(21)
Opportunity to Learn about Marine Environment	3.3	(17)	6.6	(34)	33.8	(175)	35.7	(185)	20.7	(107)	3.6	.99	(8)

Table 46.1 Satisfaction With Environmental and Setting Features on the Dive Trip (QA9)-Day Trip Results

Environment / Setting Features	Response					Mean	SD	Non Response (n)					
	Very Unsatisfied		Neutral		Somewhat Satisfied								
	%	(n)	%	(n)	%				(n)				
Good Weather	.9	(2)	3.6	(8)	8.2	(18)	26.4	(58)	60.9	(134)	4.4	.86	(1)
Warm Water	0	(0)	1.8	(4)	3.2	(7)	25.6	(56)	69.4	(152)	4.6	.65	(2)
Good Underwater Visibility	1.4	(3)	22.3	(49)	25.9	(57)	32.3	(71)	18.2	(40)	3.4	1.07	(1)
Variety and Amount of Marine Life	2.8	(6)	6.4	(14)	17.9	(39)	43.1	(94)	29.8	(65)	3.9	.99	(3)
Clear, Unpolluted Dive Sites	4.5	(10)	6.8	(15)	22.3	(49)	39.5	(87)	26.8	(59)	3.8	1.06	(1)
Undamaged Dive Sites	5.5	(12)	5.9	(13)	25.0	(55)	39.1	(86)	24.5	(54)	3.7	1.07	(1)
Easy Dive Conditions	.9	(2)	2.3	(5)	24.5	(54)	42.3	(93)	30.0	(66)	4.0	.85	(1)
No Crowding by Other Divers	16.4	(36)	23.2	(51)	26.8	(59)	24.5	(54)	9.1	(20)	2.8	1.22	(1)
Good Above Water Scenery	.50	(1)	1.8	(4)	26.0	(57)	42.9	(94)	28.8	(63)	4.0	.82	(2)
Unique Formations	.9	(2)	3.2	(7)	43.2	(95)	37.7	(83)	15.0	(33)	3.6	.81	(1)
Whale Sharks	62.7	(138)	10.0	(22)	21.8	(48)	1.8	(4)	3.6	(8)	1.7	1.01	(1)
Other Sharks	45.9	(101)	11.8	(26)	20.5	(45)	10.9	(24)	10.9	(24)	2.3	1.42	(1)
Manta Rays	60.9	(134)	9.5	(21)	24.5	(54)	1.8	(4)	3.2	(7)	1.8	1.08	(1)
Turtles	54.1	(119)	13.6	(30)	20.9	(46)	4.1	(9)	7.3	(16)	2.0	1.25	(1)
Good Photo Opportunities	13.6	(30)	6.8	(15)	58.2	(128)	15.9	(35)	5.5	(12)	2.9	.89	(1)
Opportunity to Learn about Marine Environment	4.1	(9)	5.0	(11)	40.0	(88)	36.8	(81)	14.1	(31)	3.5	.94	(1)

Table 46.2 Satisfaction With Environmental and Setting Features on the Dive Trip (QA9)-Live Aboard Results

Environment / Setting Features	Response					Mean	SD	Non Response (n)					
	Very Unsatisfied		Neutral		Somewhat Satisfied								
	%	(n)	%	(n)	%				(n)				
Good Weather	.3	(1)	6.6	(20)	10.6	(32)	29.7	(90)	52.8	(160)	4.3	.92	(2)
Warm Water	.3	(1)	.7	(2)	8.2	(25)	19.7	(60)	71.1	(216)	4.6	.70	(1)
Good Underwater Visibility	1.0	(3)	9.9	(30)	18.8	(57)	49.7	(151)	20.7	(63)	3.8	.92	(1)
Variety and Amount of Marine Life	1.0	(3)	6.3	(19)	10.5	(32)	42.1	(128)	40.1	(122)	4.1	.91	(1)
Clear, Unpolluted Dive Sites	.3	(1)	8.3	(25)	18.2	(55)	47.2	(143)	26.1	(79)	3.9	.89	(2)
Undamaged Dive Sites	5.4	(16)	10	(30)	24.4	(73)	42.1	(126)	18.1	(54)	3.6	1.06	(6)
Easy Dive Conditions	.3	(1)	3.0	(9)	35.3	(107)	40.3	(122)	21.1	(64)	3.8	.82	(2)
No Crowding by Other Divers	2.0	(6)	15.8	(48)	27.4	(83)	36.0	(109)	18.8	(57)	3.5	1.03	(2)
Good Above Water Scenery	0	(0)	.3	(1)	22.9	(69)	35.9	(108)	40.9	(123)	4.2	.79	(4)
Unique Formations	0	(0)	1.3	(4)	24.3	(73)	42.7	(128)	31.7	(95)	4.0	.78	(5)
Whale Sharks	58.3	(175)	16.3	(49)	13.7	(41)	1.7	(5)	10.0	(30)	1.9	1.30	(5)
Other Sharks	18.0	(54)	21.7	(65)	25.0	(75)	23.0	(69)	12.3	(37)	2.9	1.29	(5)
Manta Rays	28.9	(88)	10.9	(33)	10.9	(33)	16.1	(49)	33.2	(101)	3.1	1.66	(1)
Turtles	26.0	(79)	16.8	(51)	24.0	(73)	21.7	(66)	11.5	(35)	2.8	1.35	(1)
Good Photo Opportunities	3.5	(10)	3.2	(9)	50.2	(143)	24.2	(69)	18.9	(54)	3.5	.95	(20)
Opportunity to Learn about Marine Environment	2.7	(8)	7.7	(23)	29.2	(87)	34.9	(104)	25.5	(76)	3.7	1.01	(7)

Table 47.0 The Most Enjoyable Environmental / Setting Feature (QA10a)

Environment and Setting Features	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Variety and Amount of Marine Life	30.0	(61)	27.7	(78)	28.7	(139)
Manta Rays	0	(0)	23.0	(65)	13.4	(65)
Warm Water	13.8	(28)	5.3	(15)	8.9	(43)
Good Weather	14.3	(29)	4.6	(13)	8.7	(42)
Clear, Unpolluted Dive Sites	8.4	(17)	4.6	(13)	6.2	(30)
Undamaged Dive Sites	5.4	(11)	4.6	(13)	4.9	(24)
Whale Sharks	0.5	(1)	6.7	(19)	4.1	(20)
Other Sharks	5.9	(12)	2.8	(8)	4.1	(20)
Good Underwater Visibility	4.9	(10)	3.2	(9)	3.9	(19)
No Crowding by Other Divers	3.8	(8)	3.5	(10)	3.7	(18)
Easy Dive Conditions	4.4	(9)	2.1	(6)	3.1	(15)
Unique Formations	1.0	(2)	4.3	(12)	2.9	(14)
Turtles	3.9	(8)	1.1	(3)	2.3	(11)
Good Above Water Scenery	1.5	(3)	2.5	(7)	2.1	(10)
Opportunity to Learn about Marine Environments	2.0	(4)	1.4	(4)	1.6	(8)
Good Photo Opportunities	0	0	2.5	(7)	1.4	(7)
Total	100%	n=203	100%	n=282	100%	n=485
Non Response		(18)		(23)		(41)

Table 47.1 The Second Most Enjoyable Environmental / Setting Feature (QA10b)

Environment and Setting Features	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Variety and Amount of Marine Life	12.0	(23)	19.1	(53)	16.2	(76)
Manta Rays	0	(0)	9.0	(25)	5.3	(25)
Warm Water	17.7	(34)	11.9	(33)	14.3	(67)
Good Weather	13.0	(25)	9.4	(26)	10.9	(51)
Clear, Unpolluted Dive Sites	10.9	(21)	9.0	(25)	9.8	(46)
Undamaged Dive Sites	5.7	(11)	5.0	(14)	5.3	(25)
Whale Sharks	0	(0)	2.2	(6)	1.3	(6)
Other Sharks	2.6	(5)	3.2	(9)	3.0	(14)
Good Underwater Visibility	10.9	(21)	5.4	(15)	7.7	(36)
No Crowding by Other Divers	4.2	(8)	5.0	(14)	4.7	(22)
Easy Dive Conditions	10.4	(20)	2.5	(7)	5.7	(27)
Unique Formations	3.1	(6)	4.0	(11)	3.6	(17)
Turtles	1.6	(3)	2.2	(6)	1.9	(9)
Good Above Water Scenery	6.3	(12)	3.2	(9)	4.5	(21)
Opportunity to Learn about Marine Environments	1.6	(3)	3.6	(10)	2.8	(13)
Good Photo Opportunities	0	0	5.4	(15)	3.2	(15)
Total	100%	n=192	100%	n=278	100%	n=470
Non Response		(29)		(27)		(56)

Table 48.0 Satisfaction With Various Service Features on the Dive Trip (QA12)- Overall Results

Service Features	Response							Mean	SD	Non Response (n)			
	Very Unsatisfied		Neutral		Somewhat Satisfied		Very Satisfied						
	%	(n)	%	(n)	%	(n)	%				(n)		
Accommodation on Boat	.2	(1)	2.1	(11)	16.1	(84)	40.6	(212)	41.0	(214)	4.2	.79	(4)
Food on Boat	.2	(1)	1.9	(10)	9.7	(51)	33.3	(175)	54.9	(288)	4.4	.76	(1)
Information Given by Dive Master	.2	(1)	.8	(4)	4.2	(22)	30.2	(158)	64.7	(339)	4.6	.84	(2)
Friendliness of Boat Crew	0	(0)	1.0	(5)	4.8	(25)	22.3	(117)	72.0	(378)	4.7	.62	(1)
Good Safety Procedures on Dive Bo	.8	(4)	1.9	(10)	13.7	(71)	32.0	(166)	51.5	(267)	4.3	.84	(8)
Good Dive Master	.2	(1)	.4	(2)	4.2	(22)	26.7	(140)	68.5	(359)	4.6	.60	(2)
Good Dive Buddy	.4	(2)	.8	(4)	11.9	(62)	24.4	(127)	62.5	(235)	4.5	.76	(6)
Enjoyable Dive Group	0	(0)	1.5	(8)	12.0	(63)	32.8	(172)	53.6	(281)	4.4	.76	(2)
High Quality of General Service	0	(0)	.4	(2)	7.3	(38)	40.7	(213)	51.6	(270)	4.4	.64	(3)
Commitment to Environment by Div and Boat Crew	.8	(4)	1.1	(6)	12.2	(64)	34.6	(181)	51.2	(268)	4.3	.80	(3)
Additional Activities on the Boat	1.0	(5)	3.5	(17)	51.8	(249)	21.8	(105)	21.8	(481)	3.6	.90	(1)

Table 48.1 Satisfaction With Various Service Features on the Dive Trip (QA12)- Day Trip Results

Service Features	Response							Mean	SD	Non Response (n)			
	Very Unsatisfied		Neutral		Somewhat Satisfied		Very Satisfied						
	%	(n)	%	(n)	%	(n)	%				(n)		
Accommodation on Boat	.5	(1)	0	(0)	13.3	(29)	41.3	(90)	45.0	(218)	4.3	.73	(3)
Food on Boat	1.4	(3)	0	(0)	9.1	(20)	36.4	(80)	53.2	(117)	4.4	.71	(1)
Information Given by Dive Master	.5	(1)	0	(0)	5.9	(13)	35.9	(79)	57.7	(127)	4.5	.63	(1)
Friendliness of Boat Crew	0	(0)	1.8	(4)	6.8	(15)	30.0	(66)	61.4	(135)	4.5	.71	(1)
Good Safety Procedures on Dive Bo	.9	(2)	1.4	(3)	16.1	(35)	37.2	(81)	44.5	(97)	4.2	.83	(3)
Good Dive Master	0	(0)	0	(0)	7.3	(16)	28.2	(62)	64.5	(142)	4.6	.63	(1)
Good Dive Buddy	0	(0)	1.4	(3)	16.6	(36)	25.3	(55)	56.7	(123)	4.4	.81	(4)
Enjoyable Dive Group	0	(0)	1.4	(3)	20.1	(44)	36.1	(79)	42.5	(93)	4.2	.81	(2)
High Quality of General Service	0	(0)	0	(0)	12.3	(27)	43.6	(96)	44.1	(97)	4.3	.68	(1)
Commitment to Environment by Div and Boat Crew	1.4	(3)	1.4	(3)	11.5	(25)	43.6	(95)	42.2	(92)	4.2	.81	(3)
Additional Activities on the Boat	1.5	(3)	4.5	(9)	62.0	(124)	15.0	(30)	17.0	(34)	3.4	.88	(21)

Table 48.2 Satisfaction With Various Service Features on the Dive Trip (QA12)- Live Aboard Results

Service Features	Response							Mean	SD	Non Response (n)			
	Very Unsatisfied		Neutral		Somewhat Satisfied		Very Satisfied						
	%	(n)	%	(n)	%	(n)	%				(n)		
Accommodation on Boat	0	(0)	3.6	(11)	18.1	(55)	40.1	(122)	38.2	(116)	4.1	.83	(1)
Food on Boat	.3	(1)	2.3	(7)	10.2	(31)	31.1	(95)	56.1	(171)	4.4	.79	(0)
Information Given by Dive Master	.3	(1)	1.0	(3)	3.0	(9)	26.0	(79)	69.7	(212)	4.6	.62	(1)
Friendliness of Boat Crew	0	(0)	.3	(1)	3.3	(10)	16.7	(51)	79.7	(243)	4.8	.52	(0)
Good Safety Procedures on Dive Bo	.7	(2)	2.3	(7)	12.0	(36)	28.3	(85)	56.7	(170)	4.4	.84	(5)
Good Dive Master	.3	(1)	.7	(2)	2.0	(6)	25.7	(78)	71.4	(217)	4.7	.58	(1)
Good Dive Buddy	.7	(2)	.3	(1)	8.6	(26)	23.8	(72)	66.7	(202)	4.6	.72	(2)
Enjoyable Dive Group	0	(0)	1.6	(5)	6.2	(19)	30.5	(93)	61.6	(188)	4.5	.69	(0)
High Quality of General Service	0	(0)	.7	(2)	3.6	(11)	38.6	(117)	57.1	(173)	4.5	.60	(2)
Commitment to Environment by Div and Boat Crew	.3	(1)	1.0	(3)	12.8	(39)	28.2	(86)	57.7	(176)	4.4	.77	(0)
Additional Activities on the Boat	.7	(2)	2.8	(8)	44.5	(125)	26.7	(75)	25.3	(71)	3.7	.90	(24)

Table 49.0 The Most Satisfying Service Feature (QA13a)

Service Features	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Information Given by Dive Master	14.2	(26)	15.4	(43)	14.9	(69)
Friendliness of Boat Crew	8.2	(15)	16.4	(46)	13.2	(61)
Good Safety Procedures on Dive Boat	11.5	(21)	7.9	(22)	9.3	(43)
Good Dive Buddy	11.5	(21)	6.4	(18)	8.4	(39)
Food on Boat	6.6	(12)	9.3	(26)	8.2	(38)
High Quality of General Service	7.7	(14)	7.9	(22)	7.8	(36)
Enjoyable Dive Group	6.6	(12)	8.2	(23)	7.6	(35)
Accommodation on Boat	3.8	(7)	5.7	(16)	5.0	(23)
Commitment to Environment by Dive Shop	2.7	(5)	4.6	(13)	3.9	(18)
Additional Activities on the Boat	0	(0)	.4	(1)	.2	(1)
Total	100%	n=183	100%	n=280	100%	n=463
Non Response		(38)		(25)		(63)

Table 49.1 The Second Most Satisfying Service Feature (QA13b)

Service Features	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Information Given by Dive Master	12.9	(22)	12.0	(33)	12.4	(55)
Friendliness of Boat Crew	14.0	(24)	17.9	(49)	16.4	(73)
Good Safety Procedures on Dive Boat	12.9	(22)	4.7	(13)	7.9	(35)
Good Dive Buddy	8.2	(14)	3.3	(9)	5.2	(23)
Food on Boat	5.8	(10)	12.0	(33)	9.7	(43)
High Quality of General Service	8.2	(14)	10.6	(29)	9.7	(43)
Enjoyable Dive Group	9.4	(16)	11.7	(32)	10.8	(48)
Accommodation on Boat	3.5	(6)	4.0	(11)	3.8	(17)
Commitment to Environment by Dive Shop	4.1	(7)	5.1	(14)	4.7	(21)
Additional Activities on the Boat	.6	(1)	2.2	(6)	1.6	(7)
Total	100%	n=171	100%	n=274	100%	n=445
Non Response		(50)		(31)		(81)

Table 50.0 The Extent to Which the Divers Agree with the Potential Impacts of Diving on the Coral Reef (QA15)

n=526	Response					Mean	SD	Non Response (n)
	Strongly Disagree % (n)	Somewhat Disagree % (n)	Not Sure % (n)	Somewhat Agree % (n)	Strongly Agree % (n)			
Potential Impacts								
Negative Impact on Fish	15.5 (81)	23.9 (125)	32.8 (171)	22.8 (119)	5.0 (26)	2.8	1.11	(4)
Negative Impact on Coral	8.4 (44)	17.8 (93)	20.1 (105)	40.3 (211)	13.4 (70)	3.3	1.16	(3)
Negative Impact on Water Quality	19.3 (101)	21.3 (121)	33.3 (174)	20.5 (107)	3.8 (20)	2.7	1.12	(3)
Economic Support for Protection of Reef	3.9 (20)	9.1 (47)	36.8 (190)	33.1 (171)	17.2 (89)	3.5	1.01	(9)
Provides Education to Divers Which Hel Protect the Reef	2.3 (12)	8.2 (43)	25.9 (135)	39.3 (205)	24.3 (127)	3.8	.99	(4)
Anchor Damage	14.9 (78)	16.6 (87)	34.2 (179)	20.7 (108)	13.6 (71)	3.0	1.23	(3)
Garbage / Waste	13.5 (71)	19.3 (101)	27.1 (142)	24.2 (127)	15.8 (83)	3.1	1.27	(2)
Crowding- too many divers causes harm	6.3 (33)	13.4 (70)	21.9 (115)	35.7 (187)	22.7 (118)	3.6	1.16	(2)
Prevents Fishing Which Helps Protect The Reef	5.9 (27)	8.8 (40)	40.8 (186)	26.8 (122)	17.8 (81)	3.4	1.06	(13)

*This question was not present on the original survey. This accounts for the large non-response rate.

Table 50.1 The Extent to Which the Divers Agree with the Potential Impacts of Diving on the Coral Reef (QA15)

n=221	Response					Mean	SD	Non Response (n)
	Strongly Disagree % (n)	Somewhat Disagree % (n)	Not Sure % (n)	Somewhat Agree % (n)	Strongly Agree % (n)			
Potential Impacts								
Negative Impact on Fish	17.4 (38)	21.0 (46)	33.3 (73)	23.7 (52)	4.6 (10)	2.8	1.13	(2)
Negative Impact on Coral	11.4 (25)	15.5 (34)	18.7 (41)	39.3 (86)	15.1 (33)	3.3	1.23	(2)
Negative Impact on Water Quality	20.1 (44)	22.8 (50)	33.8 (74)	19.2 (42)	4.1 (9)	2.6	1.13	(2)
Economic Support for Protection of Reef	2.3 (5)	11.9 (26)	43.6 (95)	28.4 (62)	13.8 (30)	3.4	.95	(3)
Provides Education to Divers Which Hel Protect the Reef	1.8 (4)	9.1 (20)	28.6 (63)	39.5 (87)	20.9 (46)	3.7	.96	(1)
Anchor Damage	16.0 (35)	15.1 (33)	37.4 (82)	18.3 (40)	13.2 (29)	3.0	1.23	(2)
Garbage / Waste	17.3 (38)	18.6 (41)	26.8 (59)	20.9 (46)	16.4 (36)	3.0	1.32	(1)
Crowding- too many divers causes harm	8.2 (18)	14.5 (32)	22.7 (50)	28.2 (62)	26.4 (58)	3.5	1.25	(1)
Prevents Fishing Which Helps Protect The Reef	5.9 (11)	11.4 (21)	51.9 (96)	20.5 (38)	10.3 (19)	3.2	.97	(3)

Table 50.2 The Extent to Which the Divers Agree with the Potential Impacts of Diving on the Coral Reef (QA15)

n=305	Response					Mean	SD	Non Response (n)
	Strongly Disagree % (n)	Somewhat Disagree % (n)	Not Sure % (n)	Somewhat Agree % (n)	Strongly Agree % (n)			
Potential Impacts								
Negative Impact on Fish	14.2 (43)	26.1 (79)	32.3 (98)	22.1 (67)	5.3 (16)	2.8	1.10	(2)
Negative Impact on Coral	6.3 (19)	19.4 (59)	21.1 (64)	41.1 (125)	12.2 (37)	3.3	1.11	(1)
Negative Impact on Water Quality	18.8 (57)	23.4 (71)	32.9 (100)	21.4 (65)	3.6 (11)	2.7	1.11	(1)
Economic Support for Protection of Reef	5.0 (15)	7.0 (21)	31.8 (95)	36.5 (109)	19.7 (59)	3.6	1.04	(6)
Provides Education to Divers Which Hel Protect the Reef	2.6 (8)	7.6 (23)	23.8 (72)	39.1 (118)	26.8 (81)	3.8	1.01	(3)
Anchor Damage	14.1 (43)	17.8 (54)	31.9 (97)	22.4 (68)	13.8 (42)	3.1	1.23	(1)
Garbage / Waste	10.9 (33)	19.7 (60)	27.3 (83)	26.6 (81)	15.5 (47)	3.2	1.22	(1)
Crowding- too many divers causes harm	4.9 (15)	12.5 (38)	21.4 (65)	41.1 (125)	20.1 (61)	3.6	1.09	(1)
Prevents Fishing Which Helps Protect The Reef*	5.9 (16)	7.0 (19)	33.2 (90)	31.0 (84)	22.9 (62)	3.6	1.10	(10)

Table 50.3 The Extent to Which the Divers Agree with the Potential Impacts of Diving on the Coral Reef (QA16)

n=526	Condensed Results		Response				
	Strongly or Somewhat Disagree		Not Sure		Strongly or Somewhat Agree		Non Response
	%	(n)	%	(n)	%	(n)	(n)
Potential Impacts							
Negative Impact on Fish	39.5	206	32.8	(171)	27.8	145	(4)
Negative Impact on Coral	26.2	137	20.1	(105)	53.7	281	(3)
Negative Impact on Water Quality	42.4	222	33.3	(174)	24.3	127	(3)
Economic Support for Protection of Reef	13.0	67	36.8	(190)	50.3	260	(9)
Provides Education to Divers Which Helps Protect the Reef	10.5	55	25.9	(135)	63.6	332	(4)
Anchor Damage	31.5	165	34.2	(179)	34.2	179	(3)
Garbage / Waste	32.8	172	27.1	(142)	40.1	210	(2)
Crowding- too many divers causes harm	19.7	103	21.9	(115)	58.4	306	(2)
Prevents Fishing Which Helps Protect The Reef	14.7	67	40.8	(186)	44.5	203	(13)

Table 51.0 The Extent to Which Divers View the Impact of Diving on the Reef (QA16)

Impact of Diving	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Very Negative (1)	3.6	(7)	2.0	(6)	2.5	(13)
Somewhat Negative (2)	38.2	(83)	28.3	(86)	32.4	(169)
Not Sure (3)	18.4	(40)	15.8	(48)	16.9	(88)
Somewhat Positive (4)	28.1	(61)	36.8	(112)	33.2	(173)
Very Positive (5)	12.0	(26)	17.1	(52)	15.0	(78)
Mean	3.07		3.38		3.25	
SD	1.12		1.12		1.13	
Total	100%	n=217	100%	n=304	100%	n=521
No Response	(4)		(1)		(5)	

$\chi^2 = 10.319$, $df=4$, $sig=.035$

Table 51.1 Divers View the Impact of Diving on the Reef (QB13)- Grouped

Impact of Diving	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Negative	41.5	(90)	30.3	(92)	34.9	(182)
Positive	40.1	(87)	54.9	(164)	48.2	(151)
Not Sure	18.4	(40)	15.8	(48)	16.9	(88)
Total	100%	n=217	100%	n=304	100%	n=521
No Response	(4)		(1)		(5)	

$\chi^2 = 10.319$, $df=4$, $sig=.035$

Table 52.0 Did Divers See Evidence of Negative Impacts on the Reef Created by Dive Group Participants? (QA17)

Impact of Diving	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
No	69.7	(152)	71.7	(218)	70.9	(370)
Yes	30.3	(72)	28.3	(86)	29.1	(152)
Total	100%	n=218	100%	n=305	100%	n=522
Non Response	(3)		(1)		(4)	

$\chi^2 = .243$, $df= 1$, $sig=.622$

Table 53.0 Interest in Participating in a Reef Monitoring Project Designed to Maintain Environmental Quality and Minimize Visitor Impacts at the Dive Sites? (AQ19)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Yes	71.1	(155)	66.2	(200)	68.3	(355)
No	28.9	(63)	33.8	(102)	31.7	(165)
Total	100%	n=218	100%	n=302	100%	n=520
No Response		(3)		(3)		(6)

$\chi^2 = 1.389$, $df = 1$, $sig = .239$

Table 54.0 Willingness To Make a Monetary Contribution Toward the Protection of the Marine Environment at the Dive Sites? (AQ20)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Yes	56.8	(121)	52.0	(154)	54.0	(275)
No	43.2	(92)	48.0	(142)	46.0	(234)
Total	100%	n=213	100%	n=296	100%	n=509
No Response		(8)		(9)		(17)

$\chi^2 = 1.14$, $df = 1$, $sig = .286$

Table 55.0 Did the Divers Visit a National Marine Park on This Trip? (QA21)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Yes	11.4	(25)	72.8	(220)	47.0	(245)
No	53.4	(117)	10.3	(31)	28.4	(148)
Not Sure	35.2	(77)	16.9	(51)	24.6	(128)
Total	100%	n=219	100%	n=302	100%	n=521
No Response		(2)		(2)		(4)

$\chi^2 = 202.372$, $df = 2$, $sig = .000$

Table 56.0 Would Divers Return to Phuket For Diving Based on This Dive Trip Experience (QA22)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Yes	68.5	(150)	72.2	(218)	70.6	(368)
No	9.6	(21)	6.6	(20)	7.9	(41)
Not Sure	21.9	(48)	21.2	(64)	21.5	(112)
Total	100%	n=219	100%	n=302	100%	n=521
No Response		(2)		(3)		(5)

$\chi^2 = 1.696$, $df = 2$, $sig = .428$

Table 57.0 Would Divers Return to The Same Dive Company Based on This Dive Trip Experience? (QA22)

Response	Response					
	Day Trip		Live Aboard		Total	
	%	(n)	%	(n)	%	(n)
Yes	92.2	(202)	88.4	(266)	90.0	(468)
No	3.7	(8)	1.0	(3)	2.1	(11)
Not Sure	4.1	(9)	10.6	(32)	7.9	(41)
Total	100%	n=219	100%	n=301	100%	n=520
No Response		(2)		(4)		(6)

$\chi^2 = 11.277$, $df = 2$, $sig = .004$

APPENDIX 3. Additional Survey Comments

LIVEBOARD PRE-DIVE SURVEY COMMENTS

Q-36. Is there anything else you would like to tell us about your hopes or expectations for this live-aboard dive trip?

- hope to see some big fish!!
- safety from other boats
- not too crowded, smooth sailing, good variety of fish, divers enjoy themselves and mix well together.
- a good dive master is my biggest expectation followed by visibility and quality/quantity of sea life.
- make very good photos!
- big fish, whale sharks and mantas are very important
- want to help Thailand with the environment
- start the REEF project here- have contests to see who can identify different and unique fish, especially on live-aboards. Have education programs that tell the divers about the variety of fish life- what a juvenile colouring is compared to the adult.
- ensure divers are aware of their actions to the reef; touching, standing, damage to reef- suggest a short brief on possible causes of damage to reef by divers.
- safety, comfort, good general services (are important)
- we hope to encounter a mythical whale shark and have a great dive trip!
- being my first experience I have no expectations aside from a new experience in a new world!
- to see a manta ray!
- to see a 5 m manta!
- to see the most under the best conditions.
- looking forward to diving in a pristine dive environment that will be perfect for underwater photography.
- Hopefully the corals etc. will be densely packed on the reef and the fish/marine life will be abundant. I am doing the liveboard also because I am doing underwater photography and you need a liveboard to do it right.
- great biodiversity, seeing and identifying new things and a first rate boat and operation.
- seeing new fish, watching all fish.
- main reason for choosing Thailand in April is whale sharks.
- I am here to learn about a part of the world that I have not experienced before. So far my dive course has been great but I can't wait to actually get into the water and see everything. I hope to see good environmentally friendly diving by everyone in my group. I expect to see some whale sharks and maybe some manta rays, but really I'll be happy seeing anything new.
- damage done to reef by divers is due to poor diving practices- good divers don't hurt reef; sewage tank pumping limits are poorly observed in Similans- I've seen some boats dump tanks on a dive site; My hope is whale sharks!
- clean and serviceable toilets; lots of pretty fish; maybe some cetaceans.
- other things you might find it interesting to know: Hopes and expectations- the big hope is whale sharks, but in general, I hope to encounter varied marine life and am particularly interested in the smaller reef creatures like crabs, shrimps and nudibranchs.
- Factors affecting our choice of destination and choice of operator- good write-ups in the British diving press. Reasonably easy to get from UK. Whole package- flights, diving, hotels could be booked through a single travel agent in the UK, an important factor when your time is limited.

- may not be possible but only there's a way to know the seasonal navigation of BIG marine animals/fish so that more divers may be attracted to dive liveaboard. Underwater photography services may be provided to participants.
- to have a nice break from the job and do some real nice and relaxing diving.
- whale shark and manta ray sightings are overexploited in advertising. Of course, we hope to see them on this, one of two trips in the area.
- people stop fishing in protected areas!
- stop cyanide and dynamite fishing!!
- We came here for the whale sharks.
- 1-accommodation, 2-restroom, 3-divemaster, 4-food, 5-friendly crew, 6-other (tv, vdo, fresh water).
- thanks for the protection and care for the marine and land environment
- that everything goes well and lots of fun.
- hope for excellent diving- top of the world!!
- expect full information from dive masters
- hope for a fun and harmonious trip for all, and of course sight pelagics and whale sharks and mantas!!
- boat crew who are concerned about the cleanliness of the dive site do not empty waste at the dive site and collect rubbish so it can be brought back to Phuket Island itself.
- hope that the dive crew enjoys the company and cultural exchange with the divers as well! (makes the dive trip a really enjoyable one!!)
- I hope to see rules and laws for the protection of the sea. We must learn to dive the good way to seriously protect the sea.
- have fun, make friends!
- good and varied diving
- to finally see a whale shark. Have many opportunities to photograph.
- to pass my Dive Master course
- to remember this trip with some bits of normal surprises and some challenging opportunities.
- good dive sites, more experience, more confidence.
- to see new marine life species not seen previously.
- to experience the clearest underwater visibility
- to enjoy the remote, beautiful surroundings above water
- to enjoy the company of the rest of the group as it is small and personal
- to benefit from small diving groups with dive master
- to enjoy the night dives as not enjoyed previously
- to dive below 24 m as not experienced deeper depths as of yet.
- excellent organization and services
- friendly and relaxed atmosphere
- perfect size of boat and arrangement
- I think liveaboard is the best way to explore the islands. Diving from shore would do much more harm to nature.
- red wine/white wine is important part of after diving life. Beer makes our belly to become BIG!!

LIVEABOARD POST-DIVE SURVEY

Q-8: Did you experience anything on this trip that made it better or worse than you wanted it to be?

- the good food made it super!

- cruising speed of dive boat very slow
- too many dive boats on some sites at the same time eg Richelieu Rock
- rain and leak in the bedroom
- no whale shark!
- lived up to expectations
- seasickness-be prepared better.
- some slippery conditions dangerous
- windy
- it was just as I had expected. A perfectly happy customer.
- I did not see any whale sharks.
- difficult to sleep at night due to noise from engine, generator.
- girlfriend got ill- ear problem could not equalize.
- card games on board, on board entertainment.
- local knowledge provided by dive masters.
- strong currents at depth and at surface not previously experienced- worse.
- the crew on the boat was excellent!
- saw leopard shark
- better- was allowed to be on my own as team with no supervision.
- was much better than expected
- worse- disappointed with self for breathing control.
- better- small dive groups!
- WHALE SHARK!!
- better-MANTA!
- visibility! Manta!
- weather was better than expected.
- boats too close to divers.
- boat needs chocolate.
- no chocolate on liveaboard (bad thing!!)
- very hot.
- liked the way the crew gave us the freedom to change dive sites in a secure way.
- YES! A MANTA!
- marine life not as plentiful as Sipiden Island, Borneo or Manado, Seledes.
- too few sharks in general, and whale sharks specifically.
- bad visibility at Hin Daeng, Hin Muang.
- dive sites were good. Richelieu rock is very good! Seeing manta rays at Koh Bon was fantastic.
- fishing boats around Similan Islands= no marine life found, 2 fish trips too! Very unbecoming of a national Marine Park!!!
- very happy and friendly boat crew that made the trip very enjoyable. The exchange of cultural backgrounds was also enlightening! Thank you (Dive Company)!!
- disappointed with range of rental equipment
- can't believe company does not own a spare dinghy.
- computer and compass should be included in 650 baht rental price per day.
- WC's may be inside the rooms
- It is very unsatisfied that when something happens it is not possible to contact mainland for quick transport to hospital (helicopter)
- worse- one accident happened to a crew member, better- we spotted mantas.
- better- I saw manta, worse- we missed whale sharks.
- the weather and visibility underwater was a little worse than I expected.
- very bad weather
- I have been on a similar liveaboard cruise last year. This trip was better because of more diving experience.

- Party! Excellent.
- Dive crew excellent, boat crew marginal.
- need fire extinguishers.
- lots of trash at dive sites.
- poor service, food quality only fair, discrimination between Japanese customers and others (others = second class)
- (Dive Instructor) covered everything more than 100%. She has a great attitude and introduces diving in a very professional manner. Thank you.
- very friendly crew.
- much coral destroyed by dynamite fishing (Koh Bon)
- Koh Bon- dead corals and no life.
- the safety precautions are not acceptable. There was an accident on our boat and we really needed to evacuate a diver to the hospital. The dive staff were amazing, but the staff at the Similan Park could not have been more UNCOOPERATIVE! It did not seem to matter that a divers life was at risk. Luckily the dive crew were able to make arrangements and it looks like he will be OK.
- stomach flu
- one of the dive masters made my trip amazing!
- (Dive Guide) was fantastic. He gets five stars!
- stomach flu, vomiting etc- possible food poisoning? Missed one full day including 3 dives because of this.
- at some occasions there were too many divers.
- stomach sickness
- stomach flu-worse
- too many divers at some dive sites- worse
- the first diving groups instructor didn't pay any attention to me at the first dive even though she knew that this was my first real dive after taking the Open Water Diver. Didn't help me, didn't explain, just told me to get in the water while she was already in the water. Very stressed and bad start. But the rest of the crew were just fantastic. But a very unprofessional instructor ruined most of it.
- the dreaded stomach bug!
- Excellent dive staff and crew! Thanks to everyone!
- dynamite fishing spoiled a lot
- the trip was good. The dive sites are overrated... no way in the 10 best in the world. Limited corals, mostly rocks, average visibility and sea life. The big bonus was seeing manta rays.
- not enough sharks
- overall, good.
- I have been slightly disappointed with the amount of marine life at the 5 star dive sties. Where are all the fish everyone is talking about? I have bigger expectations for the second half of this liveaboard trip. Red and Purple Rock have received great reviews. I hope I'm not disappointed.
- my husband and I were given false expectations due to exaggerated advertising on the internet. The boat was much better than I expected. Overall I'm still satisfied with this trip.
- false advertising of whale sharks etc. It was seriously exaggerated compared to current conditions. Lack of environmental concern by local authorities makes me believe the reefs will deteriorate further. Sale of shark meat at restaurants was upsetting.
- just good diving!
- no whale sharks
- no whale sharks!!!!

- the crew was exceptional from start til end. The ignorance of some divers or lack of respect toward not harming reef, fish was frustrating. Feel more should be said by dive master as obviously some needed reminding not to crawl on coral, pet fish etc.
- Tour leader did an excellent job teaching us re: the marine flora and fauna and pointing out rare/exotic fish. The Thai dive crew was fantastic and I felt very safe diving because of them. The trip was more educational than I expected.
- sleeping arrangements left much to be desired.
- better- large creature experience, appreciation of the small creatures at the sites.
- seeing the whale shark and also the manta ray made trip so brilliant to know they are still here!
- dive sites and flora beautiful, lived up to expectations. Opportunity to see large animals (eg whale sharks, manta rays etc) not as good as expected, feel peak was in 1996 and authorities need to be award that hunting whale sharks may kill some diving trade.
- better- regarding photo tuition, worse, regarding large marine life (made up for by 1st)
- dive masters and crew positive.
- too many fishing boats
- dynamite fishing in Burma was terrible
- current on all dive sites- very strong in some sites.
- didn't expect to learn photography but enjoyed it!
- there was a lot of evidence of dynamite fishing, tons of corpses on the bottom, destroyed coral and sounds from explosions in the distance. It was terribly sad and distracted me from the beauty and diversity remaining. IN addition, we saw many illegal shark fishermen (all the way from Sumatra incredibly as they have killed all the sharks there) and they were successful- we saw the sad corpses of these beautiful and cherished creatures. Overdiving and fishing seems to be getting rid of the very creatures people come to see!
- dynamite fish kill in Burma- awful!
- food, smoothness of the sea. To be honest: I really hoped to see a whale shark.....
- dynamite fishing- the result was thousands of dead fish on the dive spot three islets in Burma.
- great dive/boat crew!
- the night dive in the storm was unreal
- the boat itself is a winner.
- better- because of some good medicines against a bad cold that kept me diving
- worse because our video camera flooded on the 2nd day.
- new friends, excellent experience with foreign dive operator.
- marine life seems to be on the decline... dynamite/fishing/too many divers.
- I suffered a strong stomach pain from food poisoning.
- hump-head parrot fish!
- better-environment protection!
- yes, the bedroom has no good ventilation, especially toilet or restroom.

Q-17: Did you see any evidence of negative impacts on the reef environment created by participants in your dive group?

- people touching coral.
- litter
- diving with gloves and touching corals
- preventing fishing may not help protect the reef- evidence?
- waste from the boat
- bad buoyancy
- touching corals.
- coral damage

- some small damages to corals
- people touching coral or hitting coral with fins when taking pictures.
- illegal fishing that isn't patrolled on a consistent basis.
- damage to soft coral
- careless finning, teasing fish.
- all divers should either hold gauges or octopus regulators or put them in pockets. Nothing should dangle and hit reefs.
- feeding fish
- photographers who didn't control their buoyancy
- feeding the fish
- coral damage by divers, knee, fins, hands, divers octopus in coral
- cigarette butts from guests. Need ashtrays and stern cautions/warnings to people.
- fins on ground.
- the current was strong. You had to hold on to the nearest formation. It was sometimes a coral, and I did see that some was damaged.
- waste disposal and divers damaging corals
- taking live shells (from National Park) out of the water and on to the boat. This person especially should know better.
- broken coral, movement of stones, poor buoyancy further damaging coral
- bad buoyancy- grabbing or breaking coral
- some divers are just all over the corals like a rash.
- some fu#\$?& German guy touched the corals all the time!
- chasing turtle
- chasing fish and turtles, coral destruction.
- dive instructor collecting rubbish from dive site.
- taking photos and touching everything
- one bad diver with poor buoyancy breaking coral.
- photographers- hitting coral with their equipment.
- damaging reefs by photographers and beginners trying to get a good view.
- hitting coral with hands, octopus and camera
- certain individuals refuse to regard concerns of the dive master. More then exception, fortunately.
- yes, some of the divers were doing a lot of damage. (Dive staff members) were aware of this, but I don't think they said anything to them. I think they didn't want to 'rock the boat' because we all had to be together on the boat for almost a week. The dive staff were nice and great to be around, but personally I thought they should have dealt with the problem as soon as it became evident.
- accidental damage to coral by divers fins
- poor buoyancy and carelessness during photography even from experienced guests.
- inadvertent touching of coral in current and surge and during photography
- why don't the dive instructors do more to stop divers from damaging the reef? It's their job, after all.
- just a little- more attention (there's no such thing as too much!) to not touch anything- coral, sea life etc is needed. Occasional mistakes were made.
- on a previous trip (recent) in Similan/Surin a Thai group totally disregarded proper diving etiquette. Harassed marine life, climbed on corals etc. Behavior did not change after repeated warnings.
- yes-fishing on the reef
- photo-divers

Q-18: Would you like to comment on the quality of the dive sites or on any impacts that you may have noticed at the dive sites?

- knowledge provided by dive masters- keep off seabed.
- too many divers at the same time at Richelieu Rock
- shark feeding is a??
- too many divers on the Richelieu Rocks
- big fish disappeared
- dynamite fishing- less big 'things' and less marine life.
- there was some anchor and fishing damage (nets) and some rubbish but it was old. Clearly efforts are being made to protect.
- old fishing nets.
- the boat discharges sewage directly overboard.
- water clarity and fish life at the exposed sites was very good, but on many of the bay and reef dives there was considerably less life and more rubbish, fishing nets etc.
- dynamite fishing is horrible!!
- not on the 10 best spots!
- fishing nets even at Richelieu Rock.
- generally the day dive sites are OK or superb but night dive sites not so exciting.
- all sites have evidence of fishing both with explosives and trawl nets. Both damaging the coral and the dive site.
- dynamite fishing is shit.
- future- strict rules for fish feeding, garbage etc. Otherwise, there will be only waste left.
- look crowded with divers because there are only a few dive sites in this area
- low season, the fishermen throw the anchors on different bays and do not use the moorings. The corals are DEAD!!
- Richelieu Rock was very disappointing. If there are no sharks or whale sharks, it's uninteresting.
- At Phi Phi they are destroying Maya Bay's underwater life, the corals are dying. Big boats are going in to the bay and a lot of other boat traffic is around the island. I have been diving there 1998 1999 and now this year. I got sad when I saw it this year.
- a lot of fishing boats.
- Morning Edge is excellent dive site.
- expected more big fish.
- sometimes the coral was very damaged.
- inexperienced divers cause damage to the reef. They should make only the easy dives (not at Richelieu Rock/Tachai). We saw divers from other boats damage the reefs.
- other boats take inexperienced divers who damage the reefs by putting their hands across the reef.
- some boats carry more than 25 divers who are novice. It would be better if some dive sites were only allowed for experienced divers.
- Don't do dive course on the reef- causes damage.
- make sure boats don't fish around the reefs and can only anchor on buoys already set up.
- lots of more sharks 10 years ago
- stop overfishing
- ban shark fishing.
- Richelieu is top notch site! Some sites in Similans were spectacular.
- fishing +diving = danger to divers especially at night dive
- fishing activities in the Similans spoiled the dives!
- EVIDENCE OF FISHING IN A MARINE NATIONAL PARK!! GET IT STOPPED!!
- Koh Bon was not good, some of them has got only rock formations, no coral, no colour etc.
- many dive sites are damaged by explosives (dynamite)

- Koh Bon should be omitted.
- some reefs were better than others
- spotted some small fishing nets on every reef.
- I notice that especially Japanese and other Asian divers take 'souvenirs' (live coral) from the reef. Education on environment is obviously poor in Asia.....
- some extreme nice, average trip.
- there was a large amount of trash at some sites. Bottles, tires, etc. Should have local incentive by dive companies to recover.
- witness lots of anchor damage and dynamite fishing damage.
- Beautiful!
- not as many fish/coral as advertised.
- some locations severely damaged
- it was my first time diving. I was amazed with the overall quality of fish, water, coral and instruction.
- dive sites especially good because of clear visibility
- obvious fishing at more than one site, leading to fewer fish for divers to see. It seems that diving and fishing are real competitors?
- although there are many operators in the area, there is plenty of space so met few divers at sites.
- marine life seems to fear little danger from divers, some seem refreshingly curious about us!
- fishing activities evident at the dive site- has spoiled the whole site!
- marine life not as abundant as described in the dive books.
- motorboats are disgusting.
- conscious man can greatly help nature. Natural man is 10X worse than any nightmare or any natural disaster or animal.
- over fished areas, damage from dynamiting
- this should be the time of year to see whale sharks and we saw none. I understand they're not protected and are being killed in great numbers.
- too much dynamite damage.
- negative impact by dynamite fishing
- dynamite fishing was terrible, please try to do something about it!
- visibility has varied strongly
- stop the dynamite fishing!
- signs of overfishing. Witnessed fish bombing in the Similan Islands.
- poor visibility, few large pelagics unlike advertised.
- Similan had very little fish life at all!!
- illegal fishing boats in the national park
- found discarded batteries in sea bed
- found and recovered batteries on sea floor.
- the quality was extremely good (pieces). I noticed quite a few fishing nets on the reefs we visited. Some of the manta rays we saw had fishing lines attached to them.
- I don't think we had much impact on the environment.
- some of the dive sites were very damaged. I.e.- silvertip bank in Burma- due to anchor damage.
- beautiful unspoiled dive sites, friendly fish.
- other boats did not seem to adhere to the idea of not dropping their anchors wherever they felt.
- generally very varied and beautiful dive sites. However, had not realized that the extent in Burma of explosive fishing which seems to destroy the coral completely. Very disappointed about the killing of whale sharks and feel this is a tragedy for the area.
- most of the garbage was from fishing boats not the dive boats- I saw fishing boats throw bottles in the water.
- we were a good crew overall so our impact was minimized. Quality of dive sites were great but changing fast for the worse with overdiving and dynamite fishing.

- generally the crew and guests were considerate to the coral but there were times when the coral was damaged when needs of guests superceded the caution around coral.
- generally excellent dive sites- signs of dynamite fishing and shark fishing- hopefully economic and environmental pressure by divers can reduce this!
- on a couple of the sites visited in Burma we saw first hand results of line fishing (boat with several dead sharks) and dynamite fishing (dead and dying fish littering the reef). The appearance of our boat seemed to deter this activity from the area for the duration of our stay. If diving can prevent this sort of extreme damage it must outweigh the slighter impact that divers may cause.
- dynamite fishing has destroyed large areas of coral. Otherwise, divers are probably a minimal impact.
- old fishing nets main pollutants
- no comment
- yes, dynamite fishing/explosion
- dynamite damage.
- the dive sites are new to us- my total reaction is that everything as a whole was great.
- there was evidence of dynamite fishing throughout the trip. The number of fish (number and species) has been extremely reduced. It was very disappointing dive trip. The future of Burma marine environment is questionable if no one stops this dynamite fishing soon.
- the dive sites we visited were OK except the ones that had been dynamited. Dead fish everywhere! I have seen a lot of fishing nets (still with fish and juvenile sharks in it!). Why don't they throw them away on land if they can't be used anymore- in the sea it does a lot of damage!!
- Richelieu is starting to show signs of wear and tear with broken soft corals. Dive boats should be regulated, people who cannot maintain a hands off protocol should not be allowed in the water. Thai mafia supports dynamite fishing in Burma.

Q-24: Finally, is there anything else you would like to tell us about your scuba diving experience?

- overfishing means that there are not many fish-does this have repercussions for sharks and whale sharks? Is overfishing the reason we're not seeing any? There are too many divers at the dive sites, it should be planned better.
- do a price that includes everything- no extra charges.
- do not overcrowd the boats, please!
- I like real Thai food, not bland western food.
- Finally I saw a manta ray!
- saw mantas X 5!!
- boat missing extra amenities: extra towels, sheets
- no one able to diagnose my flu
- lack of free time options
- lack of outdoor equipment like chairs and recliners.
- very nice crew.
- due to overfishing and overdiving, quality is slightly down.
- overfishing means that there are not many fish-does this have repercussions for sharks and whale sharks? Is overfishing the reason we're not seeing any? There are too many divers at the dive sites, it should be planned better.
- enjoyable- very knowledgeable dive masters.
- excellent cruise director and dive leader, crew was friendly.
- for our first experience of liveaboards, first class.

- as this was my first liveaboard, I have nothing to compare it to but in terms of what I expected and what was delivered, I was both pleased and impressed by my (dive) experience. Our time at sea was well managed to maximize dive opportunities especially considering the area we covered. The staff was exceptional and professional, and diver safety and assistance was a priority. Of the entire trip, I believe the only disappointment would be with the other divers. Too often I felt that divers were reckless with their equipment from dragging consoles, crawling on the reef in the current (possibly because they were not physically fit for certain dive conditions rather than not acting responsibly). Too often I was divers act as well for the sake of a photograph or such and not for the welfare of the reef and animals. If any videos are available to educate divers, they might be helpful if shown at the start of the trip. Also, too often, divers pushed deco limits without regard to the obvious fact that the entire boat would have to return to shore for their sake. Again, a reminder might help.
- I'd been led to believe we would definitely see whale sharks, though by my travel agent and not by (the dive company). Generally I was disappointed there weren't more fish, sharks rays etc.
- Also, occasionally dives involved 12 or so divers all together, struggling to see small stuff, which got a bit difficult.
- lastly, we did a few sites (but especially Richelieu Rock) a lot, when I'd have preferred to do no site more than twice.
- best organized liveaboard I've been on. Well done!
- It was a very positive experience. I got some great diving in the 9 days. As a photographer I would have loved to stay at some of the dive sites longer, but you can't have everything your way!
- this trip was brilliantly organized with an excellent Dive Master and Technical Director of Photography on board. The crew were also exemplary in their kindness, assistance and friendliness at all times. Thank you!
- crew and all the people associated with (Dive Company) were brilliant and having such a knowledgeable person as (tour leader) on board and seeing some of the articles and videos were a great finish (??) to the trip. Well done to them!
- too many divers in the Similans and at Richelieu Rock- limit access and charge more- I would sign up again in an instant if this were the case.
- why can't the dive staff answer questions about the reef and its critters? Why are there no field guides on the boat? Lots of magazines but nothing really useful. I found the dive staff to be nice people, but relatively uneducated about the marine world. Many of us divers knew more than they did. Honestly, I was expecting more. (Dive Company) must be really desperate for staff.
- really appreciate the environmental consciousness and information from (Tour Leaders).
- spinner and bottlenose dolphins seen
- no whale sharks, lets hope they've not been fished out.
- I'd just like to say what a fantastic time I had. The beauty of the dive sites we visited and the amazing variety of marine life we encountered made me feel both privileged and joyful. I will be walking around with a silly grin on my face for weeks to come- and that was without seeing a whale shark!
- We've been on several dive boats- in the best evaluation I could give, I would rate the (Dive Vessel) on the same level as the Lammer Law in Ecuador S.A. I cannot give a higher compliment.
- the (Dive Company) crew care very much about the environment. No rubbish was thrown over, all cans and glass were kept separate for recycling. An all round good, positive experience.

- things like whale sharks and mantas should not be advertised to the extent that they are.
Expectations are brought too high and then people are easily disappointed. Using these animals as 'selling points' is wrong and is false advertising.
- Well, I would like to tell about the ventilation of the bedroom, especially the toilet (I mean the private toilet). If possible, you have to improve the ventilation of the bedroom, might exhaust to corridor or outside of boat. Besides this, you should install the air vent of the waste and soil in the sanitary system. I think they are all important things.
- our trip consisted of good divers that did not a-touch anything unintentionally or b-touch anything cuz' bad buoyancy. We did see others doing points a and b-this will always be the case and questionnaires such as this achieve nothing. Sorry, but the ocean does not belong to divers, especially foreign ones.
- the diving crew was extremely knowledgeable and highly committed to protecting the marine environment.
- no share of WC and shower, no generator or engine sound during the sleeping time, at least.
- I am satisfied, except the noise of the generator at night.
- Everything was good. I will recommend this trip with (Dive Company) to all my friends and colleagues at my job. Thank you!
- (Dive Company) did a superb job of making sure we were safe safe safe and happy happy! The personnel were excellent, knowledgeable, extremely friendly and it was a tremendous pleasure to spend 5 days with all of them.
- I was very happy with all of my diving with (Dive Company). The overall experience from our diving instructor was very informative as well as enthusiastic. The boat crew was more than helpful with every aspect of the trip (suiting up, refueling air tanks, getting picked up after the dive). This holiday was more than I expected from all angles. I will be back for more instruction with friends. Thank you!
- What a wonderful trip. Thank you!
- the most important thing is the number of divers on the same dive site. I'd rather pay more to avoid diving with 50 divers at Elephant Head Rock or Richelieu.
- I didn't like when the divers and diving crew were smoking on the diving deck just before diving.
- Thank you to everyone at (Dive Company). We have had a wonderful holiday and will return next year to make another liveaboard.
- The atmosphere on the boat was very nice because most of the staff were really wonderful. The diving was good and I had a very enjoyable trip.
- too many boats at the same dive site
- too many inexperienced divers. Especially from Asia (Japan, China.)
- dive master was not a certified dive master as of now. She had a very difficult time keeping a close eye on the new divers and very seldom checked on divers to assure air/time etc were properly monitored.
- very good, but not as good as the coral sea.
- to prevent overfishing- fisherman has to be a part of the monetary funding to create a win/win situation. In this case, not fishing sharks would be higher value to them when divers come to visit.
- it made me think that any new legislation which helps the environment must be passed ASAP in order to preserve these special places.
- expert diving guidance provided by dive masters on board, helpful advice, really helpful crew.
- dive company gave us a final comments sheet for ideas. Good.
- knowledgeable staff on board and in the office is important.
- introduce longer stays on live-aboard to educate every diver about the delicate nature of the reefs 'do look only'!
- Thank you for a wonderful trip! We will be back next year for sure.

-Overall, a very enjoyable trip. Very professional, knowledgeable and friendly staff.

DAY TRIP PRE-DIVE SURVEY COMMENTS

Q-36. Is there anything else you would like to tell us about your hopes or expectations for this dive trip?

- lowered costs for equipment rentals for day trips. Thanks.
- need more dive sites, longer duration trips.
- I think that diving is very commercial here in Phuket. I took diving Open Water class here. Sometimes I got the idea that the faster people got their PADI certification, the better. I got the feeling that not all the instructors liked that. Without proper education people were certified.
- personally I think that good education after your PADI exam by dive masters is very important. About the coral and wildlife- it is very interesting but also important for the specific do's and don'ts in certain dive sites- for instance- do not touch a whale shark or swim under it as the bubbles/touch will scare it away. Good buoyancy is also very important. In my opinion a lot of fresh divers do not control their buoyancy correctly. Maybe the dive instructors should tell their clients more about how to do it to prevent damaging the coral
- excited to get my diving going again.
- important to see the human impact on the dive sites and to later educate people about environmental damage
- please send me the outcome of this survey and or information about project aware. If I win the lottery and don't need to work anymore I will become a lobbyist for the marine environmental concerns. It is an idea I've had for a year. Let me know if I can help in any way. FYI-in Ft. Lauderdale, Ocean Watch is trying to create some marine parks in heavily fished/lobstered out areas.
- other suggestions: create national parks (no fishing), fee for the dive shops and support for the local fisher-people, see the diving as an 'engine' for the tourism.
- would like to see remote areas out of the mainstream and experience authentic Thailand. May have to head further north!
- a good dive briefing is very important, followed by abundance and variety of marine life. Also, it is important to trust the company- they need to have safe practices.
- I think that having a good dive master who can explain to me all the fish and coral and the way things work is very important.
- I got the impression from the internet that it was possible to see whale sharks during day trips in Phuket. I saw when I got here that this is not likely but still really hope to see one. A manta or some sharks would be nice too.

DAY TRIP POST-DIVE SURVEY COMMENTS

Q-8: Did you experience anything on this trip that made it better or worse than you wanted it to be?

- on King Cruiser dive it was too confusing when we met up with the groups from the other boats. I didn't know which way to go and had a hard time staying with my group. Should not be so many divers at one site.
- crew on boat was great! Thank you!
- current too strong.
- excellent and helpful staff!
- the existence of a Good Dive Master!!

- saw a sea horse! That's a very large extra!
- Anemone reef- there were a lot of divers- too many!
- good friendship between divers and staff and nice survey lady.
- very strong current made dive challenging.
- donuts. Yum.
- rough weather on way to dive site , very strong tide/current on 2nd dive.
- current too strong.
- multiple equipment failures of rental gear from a 'trusted' dive shop.
- my buddy and I each had equipment problems with equipment rented by a dive shop. Had the dive operation not had extras on board we would have been unable to dive. After my second dive my tank slid off just after I jumped into water.
- saw sea horses- better; no sharks at shark point= not good.
- I didn't get sea sick yet!
- saw leopard shark!
- did not see leopard sharks.
- less fish than I expected.
- no sharks but lots of lion fish- beautiful soft coral at shark point.
- better- saw a yellow sea horse. Worse- not so inspired instructor, like he already did it a thousand times (he probably did). I prefer a longer period with the same guides and instructors but this is personal.
- excellent instruction and equipment
- our instructor was fantastic- I was a bit apprehensive about my first diving experience and Tony was patient and supportive. We had an excellent experience! Thank you!
- YES- One American asshole (ugly) touched corals and life over and over (a dozen times). I advised the dive guide and he was given a lecture. After that the atmosphere on the boat was not friendly with respect to him. Even though he was in the wrong, he got mad at me because in his eyes I was a tattler and got him in trouble.
- leaking face mask- bad, saw leopard shark- good!!
- many octopus!
- too many divers
- all reefs are very similar
- too many boats
- too many boats, too much noise underwater, many dead corals, a lot of damage to the reef.
- I am very satisfied with the quality of service provided by this company. However, other aspects of the trip left a lot to be desired. For example, there were too many boats and too many divers at both sites we visited.
- I saw a fish I hadn't seen before!!
- Everybody was REALLY friendly!
- I was a new fishing net all over a nice coral area, dive master fixed by carefully cutting it out.
- bathrooms clean, worked efficiently! A great plus!!
- too many boats at the dive site. Encountered many divers underwater, but my biggest concern is the other boats.
- too many divers and boats, didn't feel very safe with so many boats moving around.
- broken coral, very few large fish.
- 2nd dive location at Racha was not as good as it should have been.
- with so many boats racing around at the dive sites, I was afraid to get into the water. The boats just race through the water, some go very very fast! (ie- the dive club speed boat that nearly hit the kids who were snorkeling today!). It looks like they are just joy riding and being stupid with their tourists (looked like Japanese and Thai tourists). Is this type of behavior OK? Will it only stop when someone is killed? Who will do something about this? Is there a speed limit that can be enforced at the dive sites? Also, the other dive boats

come so close to divers on their way to pick up people. There are so many boats at each dive site, and it is surprising that there are not more accidents. This is very unsafe. -my instructor was wonderful and patient. She knew I was nervous and she gave me extra attention. Thank you.

Q-17: Did you see any evidence of negative impacts on the reef environment created by participants in your dive group?

- good information = good protection
- slight coral damage caused by novice divers, not enough dive masters to watch them.
- feeding fish, food dumped overboard
- small buoyancy problems
- people touching corals, waves caused by fins
- some dive masters touch coral and break coral by swim through.
- touching coral, by group members, even instructors, especially by Japanese divers.
- certain other divers touching the reef.
- slight damage to coral formations
- touching and collecting coral and shells (I threw them back overboard when he wasn't looking.)
- our group seemed to have positive impacts, as the divers were careful and the instructor cleared garbage from the reef.
- we did notice divers from other groups touching things, although it's difficult to determine which boat they were from as there were so many at Racha Yai.
- one diver continuously touched the corals and I told the divemaster and he was reprimanded
- bad buoyancy by underwater photographers damaging corals
- missing diving skills leads to divers damaging the corals
- collecting shells (live ones!)
- our dive guide was wearing dive gloves and touching things, but we were told at the head office that the dive company had a no-touch policy. How about practicing what you preach?
- moving stones and disturbing fishes
- killing the coral
- collecting the coral and shells
- chasing and poking fish
- damage by anchor and divers
- I don't know if it causes harm or not, but is there a reason that all the extra food gets dumped over the boat at the dive site? Even if it doesn't harm the fish, it reduces the visibility near the boat.
- divers kicking the reef, those who making the dive course standing on the reef- is there somewhere else they can learn where they won't make any harm?
- divers collecting shells and touching turtles.
- divers standing on coral, kicking with fins and collecting shells
- divers break coral
- food dumped over, feeding fish.
- yes, but it wasn't the other divers, it was the dive master. He stood on the coral when doing the dive lesson, and then swam too close to the coral and kicked it with his fins. He also dragged his octopus. What can you say? He's supposed to be the expert.
- snorkellers should not be allowed to feed the fish.
- I have been hearing about how the 'inexperienced divers' cause damage to the reef. I have been watching and what I have noticed seems to be the opposite to this. The new divers appear to be so afraid to harm anything that they stay well away from the coral. Many of the more experienced divers seem to get cocky and go so close to the coral, sometimes damaging it without realizing it. I think that this problem needs to be addressed, perhaps by better dive

briefings and more careful supervision of experienced divers until they have proven themselves. I'm not saying that the new divers do not cause harm, I am just saying that they should not be blamed for everything.

Q-18: Would you like to comment on the quality of the dive sites or on any impacts that you may have noticed at the dive sites?

- occasional rubbish
- a couple of divers are more interested in making pictures and touching fish than protecting marine life. There should be some kind of license which you can take away when divers are behaving badly.
- current too strong to dive enjoyable in today.
- some small accidental damage is unavoidable.
- Racha Yai seemed fairly damaged- too many divers??
- I don't believe we had any kind of negative impact.
- We cleaned up some garbage- to be precise, the dive master picked up two old batteries (D cells like in a flashlight)
- dive sites were of very good quality and divers were instructed not to touch coral or harass marine life.
- big fish are disappearing
- leopard sharks are gone!
- shark point is very pretty, few divers which is rare.
- instructor picking up garbage
- all divers were careful not to touch or damage reef or fish etc.
- dive master cleared garbage from the reef.
- (Dive Instructor) set a good example for us by keeping his hands together and close to his body (no Saturday night fever moves) , and reminded us to do the same.
- many boats- it depends on the staff to stop the tourists from impacting negatively on the site, the (Dive Company) staff did a good job of this with our group (that I noticed)
- hardly any fish
- quality of sites varies day to day with visibility.
- too many divers stirring up stuff creating difficult/bad visibility.
- anchor damage
- previous carelessness toward marine environment.
- some damage done to corals, probably by anchoring ships and careless divers.
- fine fish and corals generally, maybe I expected to see more?
- the dive sites are in good condition, although it is quite clear to me that they suffer from divers and from net fishing.
- excellent sites, good friendly dive guide.
- lots of dead coral
- dive companies collaboration would decrease crowding at dive sites.
- need to limit divers at sites each day
- the number of fish is limited
- for the extreme numbers of divers the reef is still in OK condition
- rules/information from the divemaster is very important to keep it this way.
- sites tend to be over fished by commercial fishermen
- dead coral
- fishing nets stuck on reef, rubbish on bottom of reef and floating around at surface, I saw that the survey lady and the dive master swam out to pick it up
- it was my first dive, so I don't know.

- fish nets on reef
- good quality, good visibility, large variety of marine life.
- several fishing nets on coral, much broken coral
- snorkellers from other boat grabbing fish and feeding the eel.
- very easy dive site with a beautiful aquatic life.
- corals not in the best conditions because too many courses in Racha Yai. Instructors responsibility.
- dive sites are good but generally not excessively exciting, myths about whale shark presence in Similans should not be propagated!!
- I have been diving at Racha Yai several times throughout the last month. Today I noticed something different, it looked like someone had dragged an anchor for about 40 metres through Staghorn reef. The damage is horrible- about 40 m. long and up to 2.5 m wide in some places. The coral is broken and it is very very sad. This is very recent as I have not seen it before.
- not sure, but I think I saw instructor from other boat standing on coral as he practiced skills with his students. It looked like his students did not imitate, which is good.

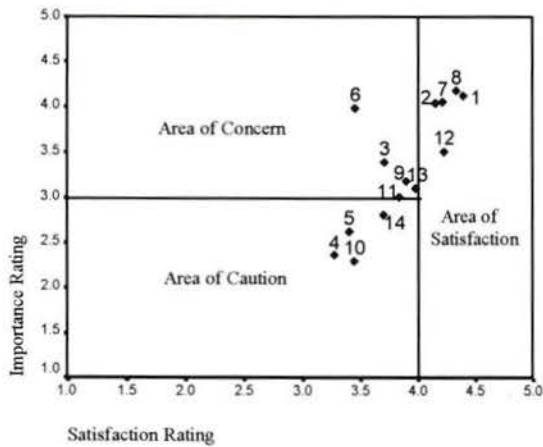
Q-24: Finally, is there anything else you would like to tell us about your scuba diving experience?

- had a great day and feel a lot more comfortable about scuba diving! Thank you!!
- I'm wet when I dive.
- overall very good.
- This was a social group- most spoke English and all seemed to get along well together.
- thank you and good luck!
- I really enjoyed the multicultural experience of being with people from all over the world and lots of different levels of experience brought together with a common joy- diving! I thought that everyone was very nice and respectful of each other and their customs.
- impressed by the dive instructors in all aspects- friendly, knowledgeable, helpful and interested in doing their part to protect the marine environment. Thank you for a great day!
- service was excellent
- fantastic staff and friendly crew.
- crew protective of reef- cutting loose old ropes to free environment and making sure we all respected it. No one touched anything, most were very respectful to look and not disturb. Very impressed!!
- I will be glad to take actions for the protection of the diving sites when I become a more frequent diver.
- excellent dive staff! Thank you!
- I find most divers responsible to the environment they dive in, therefore the environment remains nice for others to experience.
- I've never see flora and fauna abuse on this trip.
- Phuket's flora and fauna was great to see.
- Anemone reef is one of the most beautiful places for diving in Phuket.
- I think that something really needs to be done about the boat traffic at the dive sites. First of all, there are too many dive boats. This causes unsafe situations when there are so many divers in the water. Secondly, there are just too many divers at the dive sites. I know that Racha is used to train new divers, however, isn't there something that can be done to spread the divers out? I would gladly pay a little more to have a more intimate dive.
- need to educate local people not the tourist.

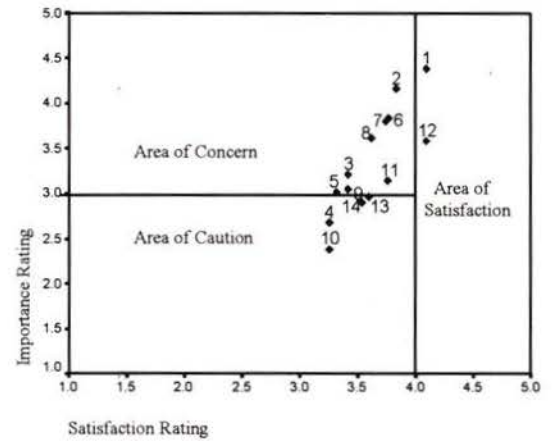
APPENDIX 4. Individual Diver Specialization Action Grids

Reasons For Participating In Scuba Diving

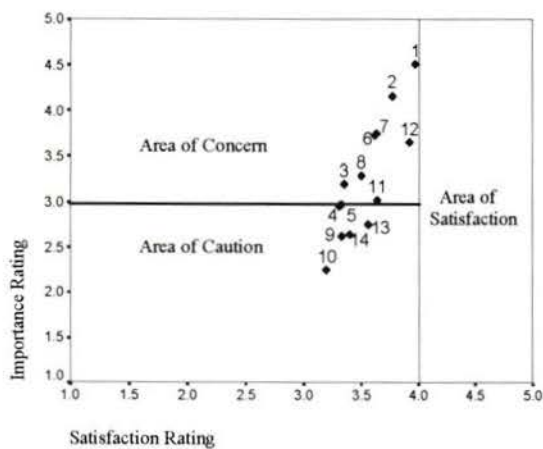
Low Diver Specialization



Medium Diver Specialization



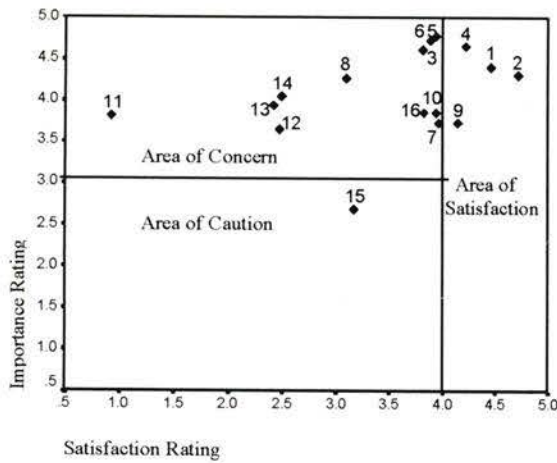
High Diver Specialization

Legend

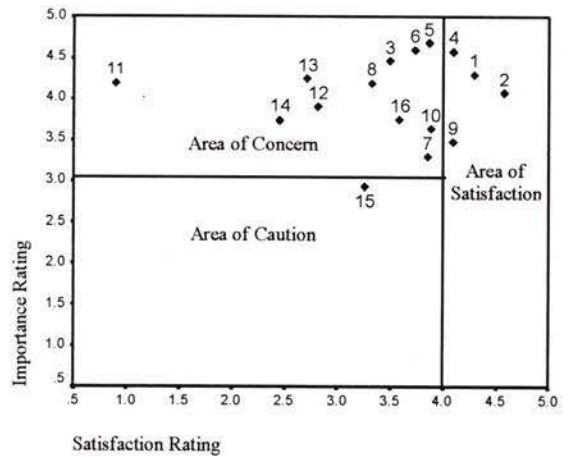
1. Interest in marine flora and fauna
2. Wilderness/nature experience
3. Looking for adventure
4. Interest in underwater photography
5. Interest in a special underwater feature
6. Explore new environments
7. Expand my knowledge
8. Develop my diving skills
9. Challenge my diving skills
10. Image of the sport
11. Be with friends/family/associates
12. Escape the demands of every day life
13. Social activity
14. Exercise

Environment/Setting Features

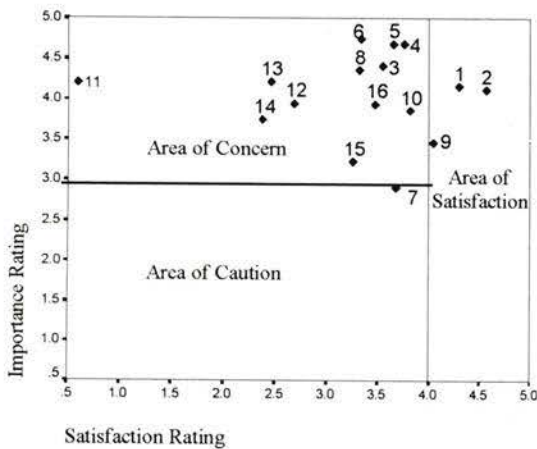
Low Diver Specialization



Medium Diver Specialization



High Diver Specialization

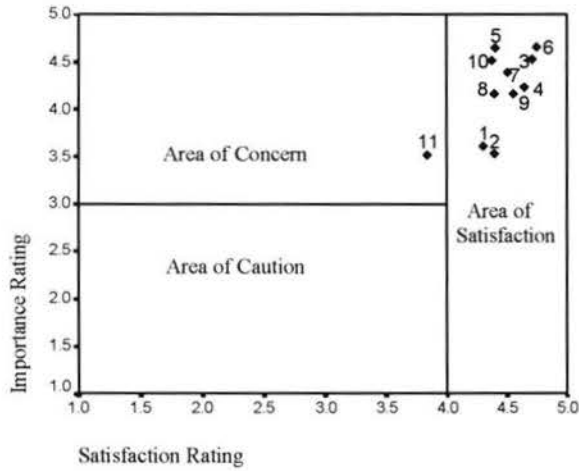


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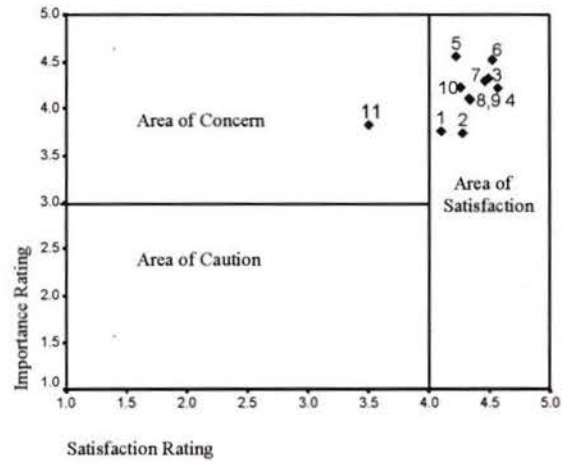
1. Good weather
2. Warm water
3. Good underwater visibility
4. Variety and amount of marine life
5. Clear unpolluted dive sites
6. Undamaged dive sites
7. Easy dive conditions
8. No crowding by other divers
9. Good above water scenery
10. Unique formations
11. Whale sharks
12. Other sharks
13. Manta rays
14. Turtles
15. Good photo opportunities
16. Opportunity to learn more about marine environments

Service Features

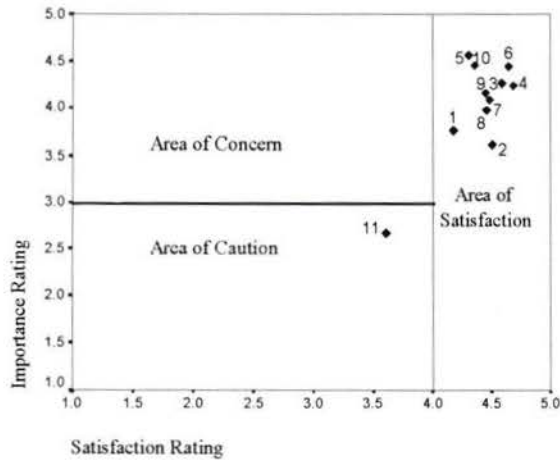
Low Diver Specialization



Medium Diver Specialization



High Dive Specialization



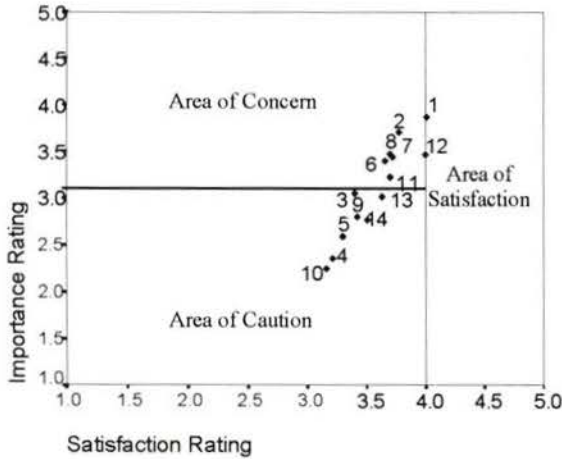
Legend

1. Accommodation on boat
2. Food on boat
3. Information provided by dive master
4. Friendliness of crew
5. Good safety procedures on boat
6. Good dive master
7. Good dive buddy
8. Enjoyable dive group
9. High quality of general service
10. Commitment to environment by dive shop and crew
11. Additional activities (dive courses, shore trips, snorkeling etc.)

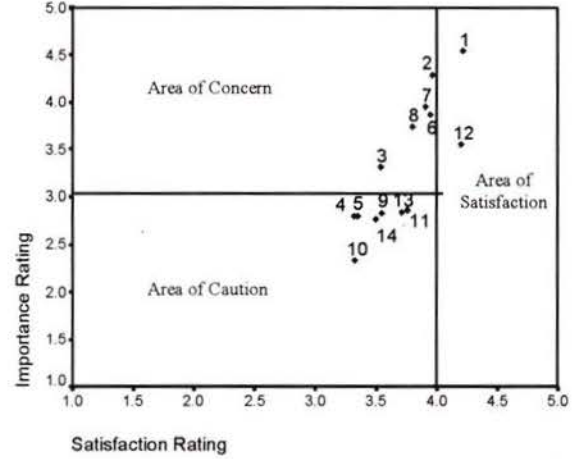
APPENDIX 5. Individual Ecotourist Specialization Action Grids

Reasons For Participating In Scuba Diving

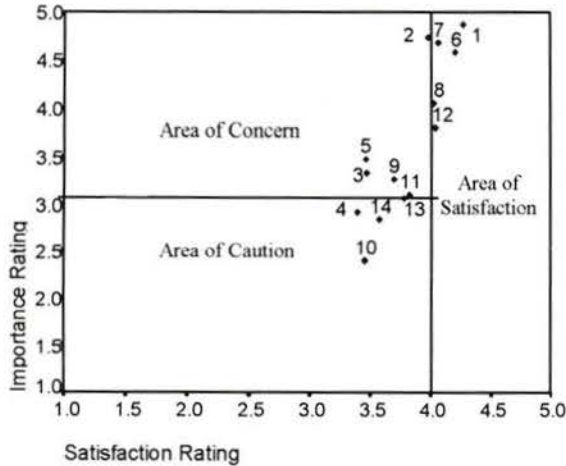
Low Ecotourist Specialization



Medium Ecotourist Specialization



High Ecotourist Specialization

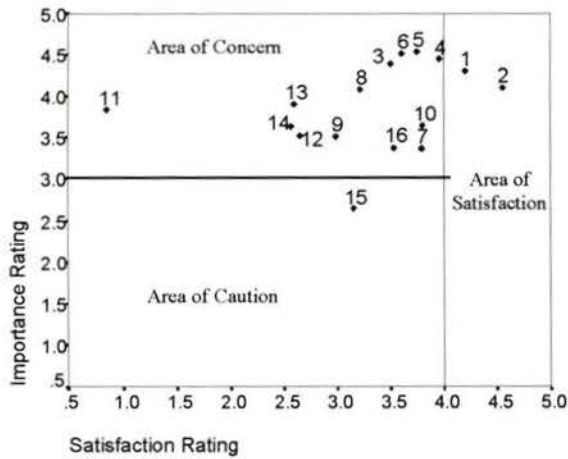


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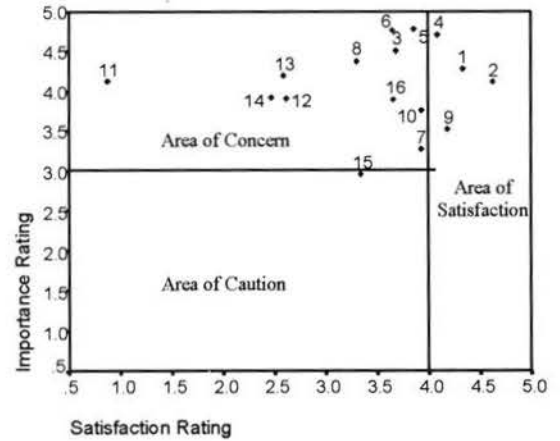
1. Interest in marine flora and fauna
2. Wilderness/nature experience
3. Looking for adventure
4. Interest in underwater photography
5. Interest in a special underwater feature
6. Explore new environments
7. Expand my knowledge
8. Develop my diving skills
9. Challenge my diving skills
10. Image of the sport
11. Be with friends/family/associates
12. Escape the demands of every day life
13. Social activity
14. Exercise

Environment / Setting Features

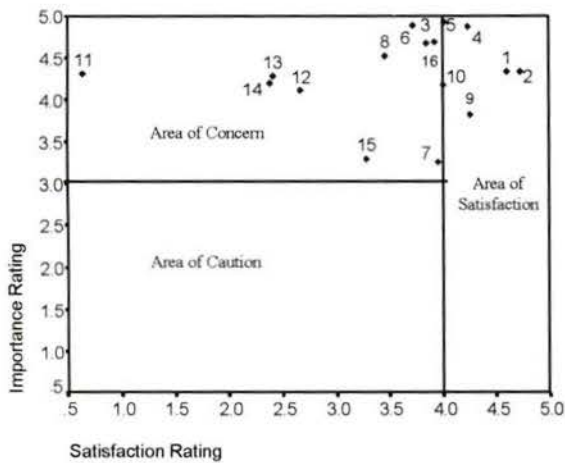
Low Ecotourist Specialization



Medium Ecotourist Specialization



High Ecotourist Specialization

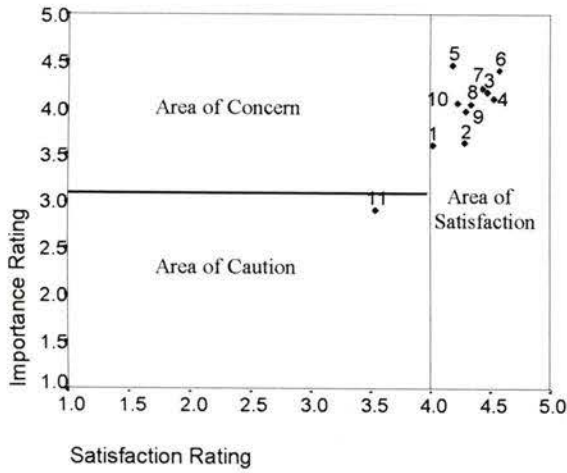


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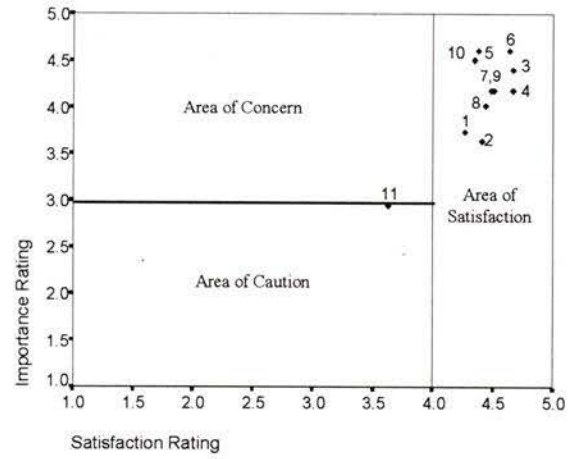
1. Good weather
2. Warm water
3. Good underwater visibility
4. Variety and amount of marine life
5. Clear unpolluted dive sites
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7. Easy dive conditions
8. No crowding by other divers
9. Good above water scenery
10. Unique formations
11. Whale sharks
12. Other sharks
13. Manta rays
14. Turtles
15. Good photo opportunities
16. Opportunity to learn more about marine environments

Service Features

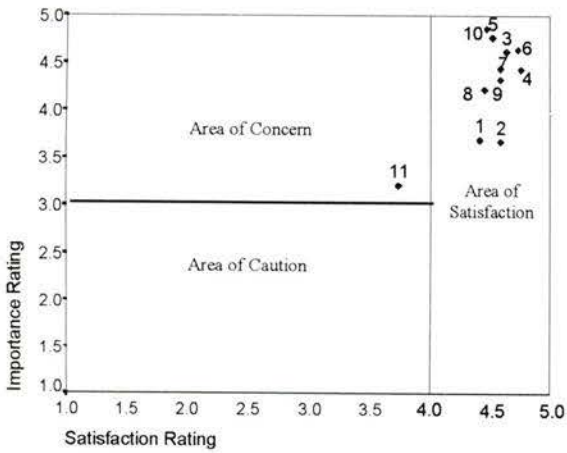
Low Ecotourist Specialization



Medium Ecotourist Specialization



High Ecotourist Specialization



Legend

1. Accommodation on boat
2. Food on boat
3. Information provided by dive master
4. Friendliness of crew
5. Good safety procedures on boat
6. Good dive master
7. Good dive buddy
8. Enjoyable dive group
9. High quality of general service
10. Commitment to environment by dive shop and crew
11. Additional activities (dive courses, shore trips, snorkeling etc.)

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2000-2001

1999-2000

National Conservation Scholarship, National Campers and Hikers Association 1993-1997

1993-1997

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"Monitoring and Marine Park Management at Koh Surin and Mu Koh Similan, Thailand." (2002) pp. 137-153 in P. Dearden (ed.) Environmental Protection and Rural Development in Thailand: Challenges and Opportunities. White Lotus Press (with Dr. P. Dearden and M. Theberge).

"Monitoring and Marine Park Management at Koh Surin and Mu Koh Similan, Thailand." (2002). pp. 1283-1293 in S. Bondrup-Nielsen *et al.*, (eds.) Managing Protected Areas in a Changing World: Proceedings of the Fourth International Conference on Science and Management of Protected Areas. Science and Management of Protected Areas Association (with Dr. P. Dearden and M. Theberge).

"The Sustainability of Dive Tourism in Phuket, Thailand" (in press). (with Dr. P. Dearden and Dr. R. Rollins). In the Proceedings of the Centre for Asia-Pacific Initiatives Conference on Southeast Asia (26-28 October 2001).

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Author:



Michelle Bennett

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