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Roatan Honduras and Perceptions of Divers' Location Choices in the Caribbean

Juli Dawn Tripicchio
Western Michigan University

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by

Juli Dawn Tripicchio

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Thesis Committee
David Lemberg, Ph.D. Chair
Lucius Hallett IV, Ph.D.
James Lewis, Ph.D.

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Juli Dawn Tripicchio, M.A.

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The purpose of this study is to determine the hierarchy of location choices that divers make for destinations in the Caribbean; to identify where Roatan, Honduras fits into this hierarchy; and to determine strategies to increase the volume of dive tourists to Roatan. This research may provide resorts on Roatan, along with other Caribbean dive destinations, with data to incorporate into their own planning and marketing processes so they can better accommodate dive customers and their families. In order to get a better understanding of dive customers, a survey was given to customers of a survey was conducted at a successful resort in Roatan, Honduras, Anthony's Key Resort with an aim to collect data on diver's experiences in the Caribbean and specifically Roatan. On-site field observations as well as interviews also constituted part of the research for this project.

The analysis of 97 Surveys, along with the interviews, identified a series of attributes that were used to develop a Diver Destination Decision Model that lays out the order in which decisions are made by scuba divers. The findings in this research point towards the importance of the condition of coral reefs and the value of word of mouth concerning reef condition as a source of information for many divers.

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Juli Dawn Tripicchio

TABLE OF CONTENTS

Table of Contents - Continued

Table of Contents - Continued

LIST OF TABLES

List of Tables - continued

LIST OF FIGURES

List of Figures - continued

Figure 1: Anthony's Key Dive Resort in Roatan, Honduras

Source: Anthony's Key Resort, photographer: Erick H. Bush

CHAPTER

1. INTRODUCTION

Scuba Diving

"The water is welcoming for those who know it. It washes away our worries as it rids us of gravity".

- *Phillipe Tailliz (1905 – 2002)*

The fascination of the sea has captivated travelers from very early on. Even before gear and equipment allowed people to explore the sea more profoundly, early Caribbean travelers were fascinated with the incredible excitement available in the world beneath the sea. As soon as underwater viewing equipment became available, the sport of subsea exploration took off. Rubber goggles, with glass lenses and face

masks became a standard packed item for many tropical travelers by the 1930's and a new wave of adventure travel began (Huber, & Huber, 1998). A lot has changed since then, especially in terms of diving equipment, viewing and depth capabilities, but the appeal of the sea and its extraordinary inhabitants are still enchanting visitors at an increasing rate.

Dive vacations have now become a huge part of Caribbean travel. Scuba diving is now a multibillion dollar industry and one of the world's fastest growing recreational sports (Ong, & Musa, 2011). There is an entire industry that caters exclusively to divers and snorkelers including resorts, travel agents, tour operators and yacht charters. All-inclusive resorts have added scuba lessons and tours and cruise ships offer all-dive itineraries. Novice sailor-divers can rent a yacht with a captain who doubles as a dive instructor and a reef-and-wreck tour guide. The biggest consideration left for the traveler is deciding where to go. This thesis will take a look at the question of where diving tourists go in the Caribbean and the hierarchy of their destination choices.

According to Highman et. al. (1996), tourist flows, both domestic and international, are not random. It is beneficial to define and understand tourists' travel patterns when dealing with the planning, development, marketing, and promotion of tourism. However, due to multiple facets involved with the spatial behavior of tourists, it is difficult to predict. Spatial information systems are used since there are many spatial elements in the modeling of the topology of nodes in tour networks. These include gateway cities, major tourist generators, staging nodes, minor tourist

generators, overflow nodes, and other spatial components such as connectivity and distance.

Spread of Tourists

Tourism is playing an increasingly important role in the development of the world's economies. It has become a global phenomenon that includes a variety of types of businesses and government entities. According to Smith (1990), tourism is a spatial phenomenon, involving a movement of people between two destinations (as cited by Highman, et. al., 1996). As industry managers realize the importance of understanding tourists movements, models have been developed to help decision-makers appreciate current trends and travel movements to forecast for further developments. Incorporating a spatial component, Mariot's model of tourist flows between two locations proposes that three travel routes may connect a place of origin or residence to a destination or tourist centre (Highman et al., 1996). A direct route between a point of origin and destination is provided by both the access and return routes. Another travel route, recreational in nature, allows the traveler to make use of tourist facilities, view scenery or tourist operations. Furthermore, this route can be entered or excited during any stage of travel. Another model distinguishes between three groups of travelers based on motivations for travel. [In this model complied by Pearce (1995) the recreationist first travels radially from the city and is motivated by the desire to participate in recreational pursuits.] Secondly, patterns of travel which best define the vacationers are linear or highway oriented. The journey or excursion is the primary activity and incorporates a number of stopovers on a round trip. Third, elements of both forms of travel characterize recreational vocational travel.

Miossec (1977) developed a diffusion model depicting the structural evolution of tourist regions through time and space. The model explains how tourist development in a region brings with it changes in the provision of facilities and the behavior and attitudes of tourists and the host population along with local decision-makers. During phase one of this model, regions are isolated in nature with little or no development having occurred. Tourists only have a slight idea about the destination and resident's views of tourism. During phase 2, the tourist industry reaches a point of growth, resulting in the development of a complex hierarchical system of resorts and transport routes. Local attitudes towards tourism may alter to the point where it is fully accepted. The implementation of necessary planning controls may become a feature of this phase. Within phases 3 and 4 tourists become more aware of the attractions of the region. Some areas may begin to specialize in specific activities and attractions. As the character of the region beings to alter, some tourists may seek other, less developed regions (Pearce, 1995).

This diffusion theory looks at the pre-conditions that cause growth in tourism. There are two pre-conditions of development: the 'necessary' and the 'sufficient'. 'Necessary' pre-conditions include various factors that pull people to different destinations, often nice landscapes and archaeological sightseeing. Diffusion is a process where tourism spreads-out from one location to a number of others (Andriotis, & Vaughan, 2009). Diffusion in tourism has a demand side which focuses on how tourists are informed about the destination and how they decide to visit it. The supply side focuses on ways that a destination develops the tourism industry and involves

institutions such as governments or other agencies that make decisions. In every destination, there are some individuals or institutions that decide first to produce tourist facilities. Once a small number of producers create some facilities that are successful in attracting tourists, more individuals decide to adopt the innovation, usually located near existing producers.

Tourist resorts are usually created in the vicinity of international airports. Since most of the time international airports are frequently close to the capital, resorts are located in these areas. According to Oppermann (1993), the most successful way to direct tourists to other regions is to open a new airport. Since the sea and sand attract most tourists, airports are constructed frequently along the coast. Such is the case in the Caribbean.

For the tourism industry to maintain or improve its current status, it is dependent on tourists' travel decisions which are reflected in travel behavior. According to Papatheodorou (2001), destination choice has always been an important aspect in tourism literature and there are many factors that influence travel decisions. These factors consist of culture, travel motivations, finances and previous experiences, to name a few (Ankomak et al., 1996). Cooper and Hall (2008) claim that tourism is subject to a collection of influences and factors that determine its relative distribution. Travel motivations form a key part of travel behavior. The need to see the unseen and know the unknown drives people to travel to new places and motivates them to visit new destinations (Vankatesh, 2006). It is therefore important for tourism products such as resorts to understand the travel behavior and, more specifically, the travel

motivations of tourists as it may assist in product development, improved marketing strategies, enhanced service delivery approaches and the creation of a competitive advantage. Therefore, travel behavior plays an important role in tourism as concept, industry and economy and demands investigation.

Caribbean Scuba Diving Motivations

Dive tourism is travel where at least one scuba diving expedition is included. With the second largest Great Barrier Reef, continuously warm water, great visibility, a breathtaking underwater landscape, and an abundance of marine life, the Caribbean is a prime location for diving. Although the motivation of divers seems obvious, it has been recognized through academics and practitioners, that diving tourism markets are extremely diverse. [Demographic background, socio-economic status, previous diving experience, and needs and expectations, among other criteria, vary widely from one diver to the next.] There has been little research done to try and understand the extent and nature of this diversity. The number of certified SCUBA divers has grown steadily along with the adventure tourism market in recent years. As the number of divers increases, the need for satisfying experiences, marketing strategies and knowledge of the dive market in general arises (Miesel, 2003). This research will look into what the literature says on previous models that address these differences in Chapter two. In addition, this research will explore the hierarchy of where people dive in the Caribbean, to create a model for resorts in Roatan, Honduras. The research will specifically focus on using Anthony's Key Resort as an example of a Resort that has done well since it's'

conception as a model for the successful planning and marketing of dive tourism for other Resorts in Caribbean Islands.

Anthony's Key Dive Resort

Anthony's Key Resort was the first resort committed to diving in the Bay Islands off the coast of Honduras. The owners envisioned a "tropical hide-away that might allow travelers to experience adventures and have the opportunity to enjoy Roatan's and the Caribbean's natural beauty" (Anthony's Key Resort, 2013). These original intentions were realized when the resort was completed. The resort provides a community atmosphere with wooden bungalows along a palm landscape set on a hill that surrounds its lagoon. From the resort's main grounds, a short boat ride takes guests to Anthony's Key (the islet that the resort was named after) where additional private bungalows are set out on the water surrounded by more palms with fantastic ocean views. See figure two below.

Figure 2: Anthony's Key

Source: Anthony's Key Resort

Guests are given a rare chance to tune out modern day technological distractions such as televisions so that they can enjoy their surroundings and take in the beauty of the area by relaxing on a hammock or participating in a variety of water sports. A fleet of boats is stationed at the docks for diving and snorkeling trips to the area's reefs. Located along these same docks are a photo and gift shop, dive shop, snack shop, and one of only 2 clinics on the island with a decompression center for divers.

Since 1970, Anthony's Key Resort is owned and managed by the Galindo family. Julio Galindo Sr. (Don Julio) and his family have also been active in political, environmental and social aspects of the Bay Islands (Anthony's Key Resort, 2013). Don Julio was elected mayor of Roatan for four years. Galindo then took a break from politics and became the sole owner of the resort. Several expansions in the resort were carried during this time. He established the Roatan Institute for Marine Sciences in 1989. A strong advocate for education, research and conservation, Don Julio stated, "We can no longer take it for granted that our reefs, lagoons, forests and the life they support can absorb without damage the development the island will inevitably experience. Opportunities for systematic study and research of our habitats should be offered. It is imperative that we preserve what we have." (Anthony's Key Resort, 2013). As he took a more active interest in the quality of life and environment, he wound up back in politics and was elected Senator for the Bay Islands as well as Chairman of Development. Galindo was elected mayor again in 2009 and is currently in office today.

The resort has minimal staff turnover accounting for the experienced personnel that add to the professionalism found throughout. Educational programs and encounters with marine mammals are offered at the Roatan Institute of Marine Science. Attached to the Institute is the Roatan Museum which was created with the cooperation of the Honduran Institute of Anthropology. Inside the museum, the culture and history of the Bay Islands are shown through artifacts, murals, maps and documents. Anthony's Key also provides an opportunity to work with trained naturalists on Bailey's Key to have unique encounters with dolphins in the water.

Aim of Study

In order to better understand dive customers, a survey was given to customers of Sub Aquatic Sports and Services, a dive shop in Battle Creek, MI. This survey was e-mailed to customers on the dive shop's mailing list, posted on their website and face book page, and hard copies were available to walk-in customers. [The aim of this survey was to obtain data on reasons behind location choices of divers.] A second survey was conducted at Anthony's Key Resort in Roatan, Honduras. This survey was available to customers online, as well as at the concierge desk. The aim of this survey was to collect data specifically on Diver's experiences in Roatan and at Anthony's Key.

On site field observations at the resort in Roatan were also part of this research. Information was also collected through Skype and face-to-face Interviews with Anthony's Key's marketing director, Education Coordinator and Biologist as well as divers at the resort. Subjects interviewed were chosen by random sample at the resort during the fieldwork duration of the research. Secondary data was used to develop a

thorough investigation into dive tourism in the Caribbean. This data was used to supplement the surveys, field observations, and interviews.

Once collected, data from the surveys were analyzed using a chi square test to examine the actual values versus the expected values. Field observations, photographs and video recordings were also important to the interpretation of the survey results.

The goal was to generate primary data on the diver's motivations of Caribbean dive locations. The following are the objectives that drove the research:

1. What is the hierarchy of where divers go in the Caribbean?
2. How does Roatan fit into this hierarchy?
3. How can Roatan Resorts (specifically Anthony's Key) receive a larger share of Caribbean divers' location choices?

This data, along with data from field observations, will provide a model for best practices in planning, managing and marketing dive tourism. Input from divers will benefit dive resort and dive shop business's efforts to understand diver's perceptions of dive locations and dive resorts. All dive shops/resorts in Roatan, Honduras may benefit indirectly by gaining a better understanding of how their operation is viewed by their customers as well as receive suggestions on how to improve their status among Caribbean divers in general.

In chapter 2, I will first present information about previous literature on tourism destination models and then provide a tourism destination model to look at how people choose to go where they go in the Caribbean. In the second part of chapter two, I will lay out information on the location of this study, Roatan, Honduras. In this section I will

begin with diving in the Caribbean and I then provide background of Roatan, Honduras including its location, topography, climate, and flora. Finally in the last part of chapter 2, I will explore the culture and history of the island.

CHAPTER

2. TOURISM DESTINATION MODELS

Tourists' destination choice has been studied from multiple perspectives due to the various sub decisions involved in the decision-making process (Fesenmaier & Jeng, 2000). Tourism systems applications starting from a geographical analysis of tourist movement and flows, as well as the interactions of components, have been extensively used in several fields including tourism marketing, planning and development and economics (Leiper, 1990). One such application, the origin-destination tourism system, puts tourism in two types of regions or components: an origin, which is related to the region or county generating the tourists, and a destination, which is related to locations visited by tourists, including all those programs and places that are designed and managed to provide for receiving visitors (Yoon, 2002). The origin most often corresponds to the source of tourism demand and the destination is usually representative of the tourism supply side that contributes particular attraction powers to tourists (Yoon, 2002). The majority of the marketing functions in tourism are conducted in the tourists' generating region, and tourism planning and development are performed in the destination region.

Growth and preservation of the tourism industry should be on the forefront of policy makers' agendas. Planners can use knowledge about what kinds of travelers choose to holiday in their country and why travelers made this choice to solidify demand for their current tourism services and also expand and adapt services to attract new types of tourists. This is important because, as Yoon (2002:16) states, "tourism is a

competitive and perishable economic product that shifts over time, depending on the changing values and preferences of holiday travelers".

Shifts in traveler behavior are complicated and make predicting tourism demand fairly challenging. In order to deal with this challenge, policy makers, planners, and industrial practitioners have attempted to develop more insightful models of tourism behavior that especially focus on holiday destination and travel modes. These models aim at predicting where individuals travel on holiday along with what travel mode they use to get there while at the same time seeks to understand how and why these decisions are made.

Previous Research Models

The literature centering on holiday destination choice decisions can usually be distinguished between different approaches to the definition of tourist destination. One common approach is based on the destination type, (distinct nature); for instance, national or regional natural parks (Decrop & Snelders, 2004). Another thread defines choice alternatives or destinations by aggregating geographical areas based on administrative units, criteria based on geographical proximity, and individual perceptions of similarity. These studies stay away from a large number of alternatives; a consequence of the continuous nature of the spatial dimension. Models typically use random utility-based multinomial logits while a few other studies have employed a nested logit structure (Seddighi & Theocharous, 2002). These are fitting methods since destinations are distinct alternatives. It is important to note that most researchers either combine all vacation purposes together when estimating a destination choice model while others develop a separate destination choice model for each leisure activity

(Decrop & Snelders, 2004). There are also structural time series models that are sometimes used to look at trend effects related to changes in arrivals at a vacation destination over time and cluster and discriminate analysis techniques are preferred by researchers who analyze destination loyalty effects (Castro, et al. 2007). Pearce (1995) proposed three different models of tourism to reveal the nature of the interaction between the demand and supply components: 1) origin-destination, 2) structural, and 3) the evolution model. Spatial hierarchy as well as spatial interactions and reciprocity are important features that support and are central to these models. In addition to the above, the literature shows that destination choice revolves around the impact of destination attributes such as price and distance (Yoon, 2002). Distance and price can be either deterrent factors or attraction factors.

Recently studies have focused on the motivations of the tourists. Nicolau and Mas (2006: 984) state that "tourists spend more or less and travel further or closer depending on their wishes at a specific time". Furthermore, the effects of distance and price on destination should alter in function of the motivation of the tourist.

There is clearly an inherent spatial dimension of tourist destination choice as the distance between the tourist's home residence and the destination is particularly important criteria in whether or not they choose to go there. There is no consensus however, in the literature on this influence. Some researches maintain that distance – or geographical position of the tourist relative to destinations – is considered a restriction or a dissuasive dimension of destination choice. This is due to the added physical, temporal and monetary cost increases to the individual tourist. Another

direction some researchers have proposed is that distance can lend positive utility. The trip itself, as stated by Baxter (1979) is a component of the tourism product and can give satisfaction in its own right, so that, at times, longer distances are preferred. Furthermore, some conclude that distance does not always act as a dissuasive factor. After observing the reaction of individuals to each unit of distance, Beaman (1976) concluded that each additional unit travelled offers less resistance than the previous.

Nicolau and Mas (2006) found distance to be a dissuasive factor in the choice of destination over all, but also that it has a differentiated effect among the individuals in their sample. They therefore concluded that longer distances do not equal less utility for all the sample tourists. Nicolau and Mas (2006) then took the study a step further. They analyzed the fact that the motivation to go on holiday is a determinant of the valuation of attributes, such as distance, and of the choice of destination. People who choose a destination for a motivation such as climate will have a greater propensity to travel further if they receive these attributes in return. Therefore Nicolau and Mas (2006: 986) state "the search for climate moderates the effect of distance on the choice of destination, in such a way that the tourist is prepared to cover longer distances". They found the same over other enjoyment attributes such as discovering new places, visiting family and friends, etc.

A consensus has not been reached in the literature on the attribute of price and its influence on destination choice. One way researchers have looked at price is as something that reduces consumption as a factor that diminishes the convenience of a destination. This gives price a negative relationship with destination choice. Nicolau

and Mas (2006) found that higher prices lead to less utility for all individuals. Others put forth that price does not dissuade destination choice, but is, on the contrary, an attraction factor. The concept of value for money can be more important (Morrison, 1996). The search for whatever it is that motivates a tourist to go on holiday such as broadening cultural knowledge and discovering new places can in this sense moderate the effect of prices on the choice of destinations, in a way that the tourist is prepared to pay higher prices for it (Nicolau & Mas, 2006).

The literature concerning consumer behavior points towards motivations representing individual inner forces that lead to action (Schiffman, & Kanuk, 1978). Tourist motivations in this sense are characteristics of individuals that have influences on the choice of destinations as they act as push factors that lead to the realization of tourist travel (Nicolau, J. & Mas, F., 2006). Motivations play an essential role in destination choice, as they compose internal ideas which result in behavior towards certain ends. The decision of a definite holiday destination implies a desire for some benefit. McIntosh and Goeldner (2005) classified these motivations into the following types: (i) physical, such as relaxation; (ii) cultural, such as discovering new geographical areas'; (iii) interpersonal, such as socializing and meeting new people; and (iv) prestige, such as self-esteem and self-actualization. Most of the literature however, has given little attention to the impact of tourist motivations on the selection of destinations as most studies assume independence between tourist motivations and attributes of the destination.

Research conducted on holiday travel mode choice, on the other hand, is mainly done using distinct options like traveling by rail, boat, automobile or plane and so is almost entirely carried out by employing discrete choice models. Many other researchers recognize that these independent models for holiday travel mode choice don't pay attention to the interwoven nature of the vacation travel mode and destination choice decisions. Many researchers have created a scheme of models for the complete holiday decision-making process to include both destination and mode choices together (Decrop & Snelders, 2004). These researchers employ a variety of structures in their model systems, but they are alike in that they all recognize that the holiday destination and travel mode choices are strongly interconnected and some of these systems model destination and mode as a packaged decision. Eugenio-Martin (2008) uses a multinomial logit framework to provide a theoretical underpinning that recommends a joint destination and mode choice model for the holiday decision process. Leiper (1990: 391) considered 'paths linking generating regions with the tourist destination region, along with tourists' travel as "transit routes"'. This model focused on the efficiency and characteristics that influence the quality of access to particular destinations, along with the influence of the size and direction of tourist flows. Adding to this, Gunn's approach (1994) explained the components of information/promotion and transportation as "linkages" that enable potential tourists to access their destinations. The overwhelming consensus from the literature is that holiday destination and travel mode need to be studied and modeled as a package decision.

The Role of Personal Preferences

Personal characteristics, destination characteristics, and trip characteristics are the three main types of independent variables that holiday destination and travel mode studies typically focus on. Personal characteristics are factors such as age, education, household composition, income, and place of residence (Eugenio-Martin, 2008). Destination characteristics include attributes such as climate, the presence of different kinds of activities, the presence and extent of coastline, quality and range of accommodations, degree of development and destination area size, Gross National Product (GNP), costs related to food, transport, and accommodations, and exchange rates (Baloglu & McCleary, 1999; Decrop & Snelders, 2004). Trip characteristics include travel distances, costs, travel times, and vacation purpose.

Tourists are becoming increasingly demanding and selective about their holiday travel, which has lead to an ever more competitive tourism market. In addition, it has driven researchers to look past the standard independent variables mentioned above into more discerning measures of traveler preferences and motivations. Researchers now gather data beyond personal characteristics or trip purposes and more into what a traveler looks for on a trip, their motivations of taking a trip, and prior expectations and experiences. Beerli et al. (2007: 578) describe the part of a traveler's personality that these methods attempt to capture as the "inherent desires for leisure travel that control where and how often an individual will travel". These preferences are being incorporated into studies on tourism demand in a variety of ways. Some researchers consider stated motivation factors, prior travel experiences, and ranking preference scales which will be discussed in the following paragraph.

Travel preference is characteristically measured by incorporating stated motivation factors from surveys or interviews into models and comparatives studies (Papatheodorou, 2001). These factors show the expectations travelers have of what they plan to accomplish on their trip or the personal benefits they imagine they will gain from taking a holiday (Balogu, & McCLeary, 1999). These factors are interpreted by a variety of studies as a level of enjoyment, or how much a traveler appreciates such activities as nature gazing, cultural heritage awareness improvement, shopping and dining, and outdoor recreation (Lehto et al., 2004). Other researchers describe it as a 'level of interest', such as Nicolau and Mas (2005) who examined interest in new places and new cultures. Still other researchers use motivation factors to look at how travelers perceive their destinations. Balogu and McCleary (1999) assessed how different destinations were perceived based on how well they allowed travelers to unwind, have excitement, gain knowledge, be social and attain prestige.

Previous travel experiences can also affect holiday travel preferences and perceptions (Beerli, & Martin, 2004). Traveler loyalty or the amount of times an individual returns to the same destination, for example, can disclose a substantial amount of information concerning the intrinsic preferences of that traveler (Castro et al. 2007). The recreation specialization theory states that the more individuals travel, the more they refine their expectations and preferences until only a few destinations meet their needs. It is commonplace for more experienced travelers to become very loyal to specific destinations (Bryan, 1977). It was concluded by Lehto et al. (2004) that previous travel experience was a significant predictor of future holiday activity participation and

expenditures. Lehto et al. looked at prior travel experience in the form of types of holidays, activities pursued during holidays, frequencies of holidays, lengths of holidays, and interactions across these factors.

Additionally, Ory and Mokhtarian (2008: 22) determined that "travel perceptions and desires are motivated by the number (and types) of trips made each year, rather than the (total) distance traveled." Ory and Mokhtarian used a likert-based ranking scale to measure perception. This scale distinguishes the personality and lifestyle preferences of travelers, and these results are then used to predict holiday travel patterns. Ranking scales for self-image and destination-image have been useful to many researchers and can be useful to investigate traveler perceptions regarding more tangible aspects of travel as well including costs, travel packages, facilities, and advertising (Beerli et al., 2007).

The three types of traveler perception measures discussed above can provide insightful strategies, but they have only been applied for vacation travel from a single origin or travel to a single destination. In addition, most of these previous studies have been accomplished with smaller sample sizes and only cover a small tourism market. The majority of available tourism studies dealing with travel patterns and behavior have occurred within the European Union (EU). The EU is visited by more tourists than any other region in the world and accounts for 54.6% of all global tourism arrivals (European Travel Commission, 2007). Certainly, tourism trends and travel patterns within the EU can be beneficial as lessons for improving tourism planning in other regions of the world after appropriate local customization.

The challenge with the EU data is that is it incomplete. The majority of studies have investigated either a) travel from a single defined origin to a set of defined destinations, or b) travel from a set of defined origins to a single defined destination. One study completed by LaMondia et al. (2009) used the *Eurobarometer* MODEL which took it a step further by combining ideologies. This study concluded that tourists are more likely to travel longer distances if they are familiar with languages and if they have looked over written materials about the distant country. The implication to countries therefore would be to target other countries with similar languages and consider investing in the production and distribution of written materials about their country. The study also found that ease of navigation and travel around the country or region in a personal vehicle is important to holiday travelers and should be given careful attention when addressing tourism. Another implication of the study was that traveler's general holiday preferences are extremely influential in choosing their vacation destination.

Social Exchange Theory

According to utilitarian economists' perspectives, people can be seen as rationally looking to maximize their material benefits (utility) from transactions or exchanges with others in a free and competitive market (Turner, 1986). The utilitarian principle proposes that people rationalize costs against benefits to maximize material benefits. This assumption can be found in a variety of theoretical thoughts and disciplines including anthropology, economics, behavior psychology, and social psychology as Social Exchange Theory. These social exchange theorists believe that exchange transactions occur based on numerous assumptions (Ekeh, 1974).

People are motivated by the hope of success and their past experiences will reduce their hesitation in making choices for future possible success. In addition, people will preserve an exchange relationship that is rewarding to them. Homans (1991), introduced the 'rationality proposition' of people's psychological exchange behavior, stating that the more often the actions of people are rewarded, the more likely they are to perform the action. In the tourism literature, a number of researchers have attempted to apply the theoretical concepts and principles of social exchange theory to explain residents' reactions to tourism development (Yoon, 2002). Those studies have focused on how residents assess the benefits and costs of tourism development, and some studies have explained residents' support for future tourism development based on their evaluations of the benefits and costs of tourism (Yoon, 2002). Social exchange theory considers the importance of stakeholder participation and involvement by providing a theoretical foundation for identifying tourism stakeholder's perceptions of the benefits and costs of tourism. Stakeholders are important key players that influence the success or failure of tourism in a region. This framework can logically explain how the exchange factors affect the results or outcomes of the exchange process.

Tourism Destination Competiveness

Creating more valuable tourism products and services for tourists so that destinations and their communities obtain social and economic benefits has been one of the goals of tourism planning and development. A better understanding of the ability of the tourism destination to compete effectively in an increasingly saturated market is necessary in order to do this successfully (Hassan, 2000). According to Hassan, the

planning and promotion of tourism destinations should be guided by a systematic analysis of the destinations' competitive factors and development strategies.

A variety of conceptual models and approaches to developing destination competitiveness have been established, but work still needs to be done concerning the testing and validating of the proposed models. Specifically the development of destination competitive strategies has not been thoroughly addressed and, furthermore, there is confusion as to which competitive strategies are more supported by tourism stakeholders in association with destination attractions and resources.

Hassan (2000: 341) regards competitiveness as a "destination's ability to create and integrate value-added products that sustain its resources while maintaining market position relative to competitors". Others describe competitiveness as "the ability of a country to create added value and thus increases national wealth by managing assets and processes, attractiveness, and aggressiveness, and proximity, and by these relationship into an economic and social model" (Ritchie & Crouch, 2000: 306). Along these lines, destination sustainability and market longevity are major areas of interest in tourism planning and development. Comparative advantages make up the tourism resources availability to a destination, while competitive advantages relate to a destination's ability to use these tourism resources effectively across time (Ritchie, & Crouch, 2000).

Throughout tourism literature many studies show that tourism destination competitiveness can be improved through certain development strategies such as marketing efforts (image, quality, positioning, branding, and services), destination

management efforts, and sustainable tourism. These development strategies can be considered as the processes or actions that can allow tourism destinations to achieve a maximum correlation with tourism demand. Destination competitiveness also can be increased by resources stewardship, involving the effective maintenance and sustenance of tourism resources including ecological, social, and cultural resources. Stewardship is an essential strategy for long term destination competitiveness. According to Ritchie and Crouch (2000, destination sustainability should be emphasized in its role in enhancing competitiveness. Sustainability has a larger function than natural environmental sustainability (Hassan, 2000). In addition, a destination's development for tourism must be sustainable, not just economically and ecologically, but socially, culturally and politically as well. Since environmental quality is an integral part of the quality of natural attractions, maintaining a high level of overall environmental quality is critical for destination competitiveness.

Destination management is related to the regular monitoring of visitor satisfaction and the tracking of industry performance. This type of information is crucial to aid in the destination managers' understanding of visitors' needs and it helps develop more effective destination products. It is also important to ensure destination productivity and effectiveness. As the world slowly embraces new models of economic development, including green and blue economies, Caribbean destinations will need to find complementary models of destination sustainability.

Research by Buhalis (2000: 98) lists six major components of tourism attractions and resources that most of the tourism literature commonly includes in assessing and evaluating the elements of tourism destinations. These components are as follows:

1. Attractions -natural, man-made, artificial, purpose-built, heritage, special events
2. Accessibility – entire transportation system comprised of routes, terminals and vehicles
3. Amenities – accommodations, catering facilities, retailing, other tourist services
4. Available packages – prearranged packages by intermediaries and principals
5. Activities – all activities available at the destination and what consumers will do during their visit
6. Ancillary services – services used by tourists such as banks, telecommunications, newsagents, hospitals.

Place Attachment

The concept of place attachment has been widely applied in the study of how people evaluate natural environments and their surrounding places. The theoretical strength of the linkage between peoples' perceptions and places has been accepted as a management tool and has been used to assess the value of their surroundings and natural places, understand resource conflicts, and identify individuals or groups who should be included in the public involvement process (Warzecha, & Lime, 2001). According to Hidalgo & Hernandez (2001:256), place attachment has been considered as "an affective bond or link between people and specific places". There is a wide range of emotional and social bonds between humans and their territorial area. In addition, people's attachment to place can be thought of as enduring psychological attitudes and behavioral tendencies that can allow an understanding of a person's identity based on a geographical place (Feldman, 1990).

Sequential Choice

There are many types of destinations, some of which are similar and some of which are different. Many destinations do not compete with each other at the same level. Consequently, the choice of leisure destination could follow a hierarchical process developed by Eymann & Ronning (1997) to reduce the uncertainty and complexity in the decision task: (a) tourists would first structure various destination types into a multi-level hierarchy; and (b) tourists would define a set of evaluation criteria for each level, keeping in mind that tourists consider only a few critical factors at each level of the hierarchy and that tourists consider different factors at different levels of the hierarchy.

Eymann & Ronning suggest this hierarchical strategy of decision making and proposes that hierarchies are more representative of the general choice behavior of tourists. They also consider a natural hierarchy in destination choice, which distinguishes a first stage that differentiates vacation vs. no vacation; a second stage, where vacation modes can be classified as vacation purposes (adventure, sightseeing, or studying, amusement, relaxing, or beach life); and a third stage where tourists choose geographical regions (Eymann & Ronning, 1997). This research will test Eymann and Ronning's model of Caribbean diver destination choice.

The next part of chapter two will discuss the location, culture, history, and background of Roatan Honduras in order to get an idea of what amenities and experiences are available to tourists.

Location

Diving in the Caribbean

The Caribbean includes over 7,000 islands. Thirteen of them are independent countries; these are shown in figure 3. Bordered by the Greater Antilles islands of Cuba, Hispaniola, Jamaica, and Puerto Rico to the North, and by the coasts of Panama, Colombia and Venezuela to the South, the Caribbean has a surface area of 2,754,000 sq km (World Atlas, The Caribbean, 2013). It is bordered to the west by the Yucatán Peninsula of Mexico, Guatemala, Belize, Honduras, Nicaragua, and Costa Rica and to the east by the Lesser Antilles chain including the island arc that extends from the Virgin Islands in the northeast to Trinidad and Tobago off the Venezuelan coast in the southeast. See figure 3 below.

Figure 3: Map of the Caribbean

Source: http://www.worldatlas.com/webimage/countrys/carib.htm

Most of the islands are fringed by coral reefs and have mild currents with small tides and good visibility. The Caribbean's rich biodiversity, forests, coral reefs, and attractive beaches are under serious threat because of climate change effects, some of which are already being experienced. The susceptibility of the Caribbean to these events is a result not only of the region's geographical location but also to the degree to which the islands' natural resources have been degraded, especially the accelerated deforestation in most of them. Hurricanes are becoming more frequent and intense, and so are flooding, and droughts. Meanwhile, rising sea levels and higher temperatures are predicted in the near future by scientists worldwide. Temperatures have been predicted to increase by four degrees Celsius in some tourist locations as early as 2060 and greater extreme weather events could also occur around that time of the year, according to middle case scenarios (Medelsohn et al., 2012). This climate change will affect leisure tourism in the Caribbean region. The Caribbean region has sophisticated infrastructures, a collection of diverse cultures, a laid-back attitude to life, and ideal conditions for novices and leisurely diving (World Atlas, The Caribbean, 2013).

According to the popular magazine *Scuba Diving,* in 2012*,* the best Destination for Diving was: 1. Turks and Caicos, 2. Bonaire, 3. Cozumel, 4. Cayman Islands, and 5. Roatan and surrounding Islands (Scuba Diving Magazine, 2012). Other categories people looked at when rating diving sites include: Best Marine Environment, Best Macro Diving, Best Shore Diving, Best Big Animals, Best Value of Diving Dollar, Best Advanced Diving, Best Wreck Diving, Best Underwater Photography, Best Wall Diving, and Best Beginner Diving. As the word spreads about the diving in Roatan, each year

Roatan appears in more categories and climbs higher on the lists. See figure 4 below for a map of popular dive destinations in the Caribbean.

Figure 4: Map of Popular Caribbean Dive Destinations

Figure 5: Roatan from plane window

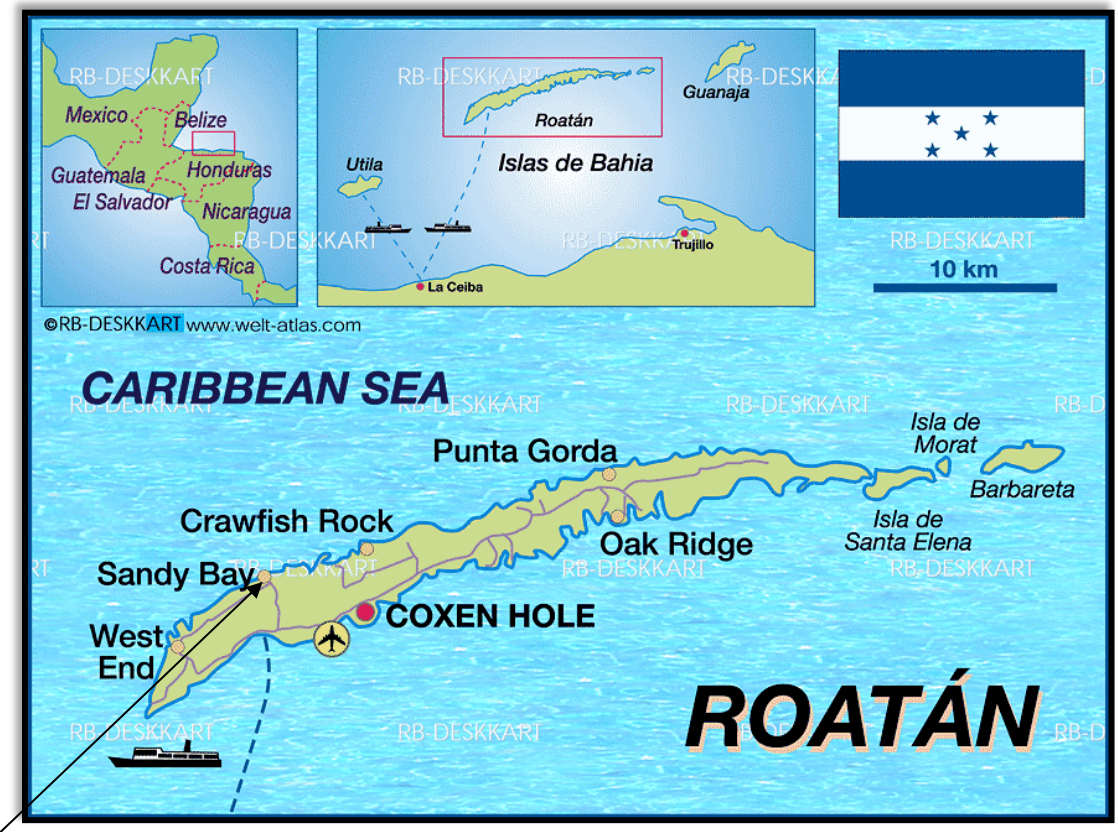
Physical Characteristics of Roatan

The physical geography of Roatan is possibly one of the most important features for the development of its tourism industry. The tropical environment, including the Caribbean Sea, provides important resources for the type of tourism that is popular today. This chapter will explain the physical geography of Roatan and show how these attributes are important to the continued development of the industry.

Location and Size

The Bay Islands consist of one of the fifteen *departamentos* (equivalent to a state in the United States) in the Republic of Honduras (Stonich & Sorensen, 1998). Located near the Mesoamerican Barrier Reef, the largest barrier reef in the Caribbean Sea (second largest worldwide after Australia's Great Barrier Reef), they are positioned in an arc 29 to 60 kilometers off the northern coast of Honduras in Central America (Stonich, 1998). The Bay Islands consist of three major islands, five minor islands and

sixty-five cays (Davidson, 1974). The largest and most predominant of these islands, in terms of land and population, are Roatan, Guanaja, and Utila (see Figure 6 below). The total land area of the Bay Islands is approximated at 238 square kilometers (Davidson, 1974). The focus of this research: Roatan, the central island accounts for over one-half of the islands total and covers 92 square miles with a population of 70,000 (Stonich & Sorensen, 1998). Roatan lies close to three smaller islands: Helene, Morat, and Barbareta as well as 52 of the Bay Island's cays.



Anthony's Key Resort

Figure 6: Study Area - Roatan, Honduras

Source: http://www.welt-atlas.de/map_of_roatan_8-624

The island is usually categorized into three areas: Western, Central, and Eastern. A heavy concentration of poorer people live toward the center in Sandy Bay. Located in the Southwestern part of the island is Coxen Hole, Roatan's capital (World Atlas, The Caribbean, 2013). Coxen Hole is the most highly populated town and the majority of the people that live in Coxen Hole are from the mainland and are called 'Indios' by the locals. This is where the main airport, a cruise ship dock and ferry dock, are located. There are many houses very close to one another in this area, most of which are shacks. This area is known as a dangerous place for gringos (white people) who, along with tourists, are advised to stay away from the area. The West End, which includes West Bay, is the most developed of the three areas and forms the island's tourist hub. There are many diving areas for tourists as well as dive shops. Most of the foreigners and wealthy people live here. Formerly a quiet fishing village, the West End has become a community of dive operators, quaint hotels and restaurants, and the central location of the Marine Park. A little further down from West End is Sand Bay where permission to collect data at this location was approved by the general manager of Anthony's Key Resort.

Topography

Along with the other Bay Islands, Roatan rests atop the underwater Bonacca Ridge which forms the northern edge of the continental shelf in the Caribbean. The Bonacca Ridge is a mountainous result of countless years of tectonic plate movement stemming from the Cayman Trench to the North (Banks & Richards, 1969). From its highest point near 270m/900ft elevation to the white-sand shores at sea level, the entire island rests atop an exposed ancient coral reef. The mountain ridge is a non-

continuous underwater extension of the Sierra de Omoa and is located near the southern precipice of the Bartlett Trough (Banks & Richards, 1969).

Roatan has varying topography: sandy beaches, iron shoreline, mangroves, wetlands, sea grass beds, tropical hilltops, lush valleys, and reef surrounded waters being most prominent (Mumby, 2006). The greater geological location of the island includes slightly sloped platforms that reach into the Cayman Trough directly to the north while the south shore has a severe drop to the continental shelf which then steadily becomes increasingly shallow between the island and mainland Honduras, about a 30 km distance (Banks & Richards, 1969). Roatan has numerous well-defined runoff routes, known as gullies, but most contain water only for a short time after rainfalls. These slopes are so steep that water runs off quickly, except for areas near the sea where the land flattens.

The Reef

The reef systems are of two types: barrier and fringing. A barrier reef is a coral wall separated from the land by a lagoon. A fringing reef however, begins next to the shore, many times with only small breaks that might allow small boat passage. Many people mistakenly assume that the barrier reef system off the coast of Belize is connected to that of the Bay Islands. This notion has been incorrectly passed along mostly in tourism literature; however, the Bartlett Trough separates the two distinct systems.

Roatan's reef extends from the north of the Yucatan Peninsula in Mexico, to the Bay Islands and is part of the Meso-American Caribbean Reef. Mostly because of the

reefs, the Bay Islands are known for their diverse tropical fish and other marine populations. These fish include porgies, old wife, black fin, wahoo, red snapper, dogteeth snapper, hogfish, and the whale shark (Harborne et al., 2001). Conch, crawfish, and four species of turtles can also be found around the islands. The marine species have been historically important to the economy of the islands and recently many of the fish have become of interest to sport fishermen.

The sea has provided sustenance for the islanders for many years. The reef provides a place for the abundant fish population to feed and survive. It also provides the islanders with protection from the dynamic ocean. More importantly, in recent years, the reefs have been the major draw for the developing tourism industry.

The entire 33 mile island of Roatan is surrounded by this wide-ranging coral reef system that is around 100 meters from the shore in most places and consists of over 50 species of coral (Mishra et al., 2005). The coral reef system is the main attraction for the booming tourism industry (mainly devoted to diving and snorkeling activity) and supports the local economy by providing a keystone habitat for fisheries. The reefs begin in as little as 20 to 40 feet with drop offs up to 100 or more feet. There are 38 world class dive sites, 32 of them are within a 15 minute boat ride from the shore which adds to the ease of diving in Roatan (Roatan Life Vacation Rentals, 2013). The dive sites contain many drop offs, canyons and the Caribbean's largest variety of coral and sponges. It is the second longest barrier reef in the world and has been designated a World Heritage Site by the United Nations Educational, Scientific and Cultural Organization (Moreno, 2005).

Roatan is known for its wall diving, as well as wreck diving. It is also popular for dolphin diving, brain coral, night cave diving, shore diving, its dive operators, and affordable hotel/dive packages. It is easy for nondivers to get lessons to get certified by good instructors while on the island. There are opportunities to snorkel on the reef as well. A description of Roatan's most popular dive sites along with a map provided by roatanonline.com can be seen in figures 7 And 8.

Figure 7: Map Showing Location of Roatan, Honduras Dive Sites

Source: http://www.roatanonline.com/roatan_diving.htm#dive

Popular Dive Sites at Roatan Honduras

Calvin's Crack	A plateau atop a shallow reef facing a wall, Calvin's Crack runs through the reef along narrows, widening to an exit along the outer wall.
Spooky Channel	This diving site is a little deeper, a former river valley formed this channel which opens to the barrier reef at 100 feet with a cathedral-like scenario. The side walls of the channel rise up to almost touch each other but still allow light to illuminate your way.
Barbareta Wall	3 miles offshore from Roatan, the uninhabited, hilly island of Barbareta offers undiscovered reefs replete with coral gardens, a dramatic mile-long wall, while the island is framed by white sandy beaches and coves; the wall is a continuous drop-off that usually offers great pelagic encounters.
West End Wall	A spectacular precipice borders a deep blue abyss, with pillar corals, Azure Vase Sponges and barrel sponges, while in the deeper water divers are likely to find themselves among schools of pelagics and Eagle Rays.
Enchanted Forest and Insidious Reef	West of Romeo's Resort, these two dives are part of a larger reef associated with an offshore bank. The drop-off begins from a series of rolling reefs that drop to 70' - 80', with Creole Wrasse and groupers in abundance among the diverse sponge and coral growth.
Connie's Dream	3-min from Romeo's Resort, this sloping drop-off provides tube and vase sponges among both red and purple tube sponges, while a seemingly endless system of tall coral heads and deep sand channels fall into the abyss.
Doc's Elbow	Directly in front of the entrance channel to Brick Bay Resort, this popular night dive provides divers with a variety of life, including octopus, reef crabs and lobsters. A short swim leads divers to the wall.
Mary's Place	Perhaps one of the most popular dive sites off Roatan, the dive starts at a permanent mooring buoy on the reef shelf, along a vertical crevice that drops from 40', with a huge section of the wall broken away from the main section to form a wide slit. Many smaller crevices invite exploration among bouquets of Rope and Tube Sponges, deepwater seafans and Black Coral. A sand shelf drops from 140' to 200', offering a magnificent underwater view.
Trunk Turtle Bay Beach	On Barbareta Island, great for snorkeling and shallow dives
Pigeon Cays	Three islets off Barbareta's south coast, with undiscovered dive sites.
Wreck Diving - "Prince Albert"	140' tanker
Wreck Diving - "El Aguila"	210' cargo boat perfectly sunk at 100 feet of water on a sandy bottom full of Deep Garden Eels. It has been adapted for penetration diving so you can descend onto open large compartments where you can surprise a number of fish in their homes. Adjacent to the boat runs the wall to finish off the dive among the shallow water tropical fish.

Figure 8: Description of Popular Dive Sites at Roatan Honduras

Source: http://www.roatanonline.com/roatan_diving.htm#dive

Climate

The geographical location of Roatan gives it a humid tropical climate. Located at 16 18' 0" N longitude, and 86 33' 0" W, it is almost equally between the Tropic of Cancer and the Equator (West & Augelli, 1989). Temperatures are typical of tropical climates as they remain high during the entire year. Over the course of a year, temperatures vary from 22 degrees Celsius to 32 degrees Celsius. The warm season lasts from July 21st to October 2nd with an average daily high above 31 degrees, and the cold season begins November 17th and ends February 16th with an average daily high below 28 degrees. Annual precipitation levels vary between the warm and cold seasons as well. There is a 25% chance of precipitation during the warm season and a 37% chance of precipitation during the cold season. The majority of the islands' rainfall occurs between October and January with November being the peak month for precipitation (weatherspark.com, 2012). See figure 9 on the next page.

Wind speed is usually below 25 mph and varies from 1mpg to 19mph on the island. The highest average wind speed occurs around July 7th, and the lowest average wind speed occurs around November 14. Wind most often comes out of the east (weatherspark.com, 2012). Eight to 11 hurricanes form in the Caribbean each year. Hurricans most often affect the region around the Bahamas. The Bay Islands, however; are rarely affected by hurricanes (World-Weather-Travelers-Guide.com, 2013). Storm strength is lessened by three phenomenons: how the Bay Islands are situated in the Bay of Honduras, their distances from the mountains on the mainland of Central America, and the general northwestwardly paths of these storms.

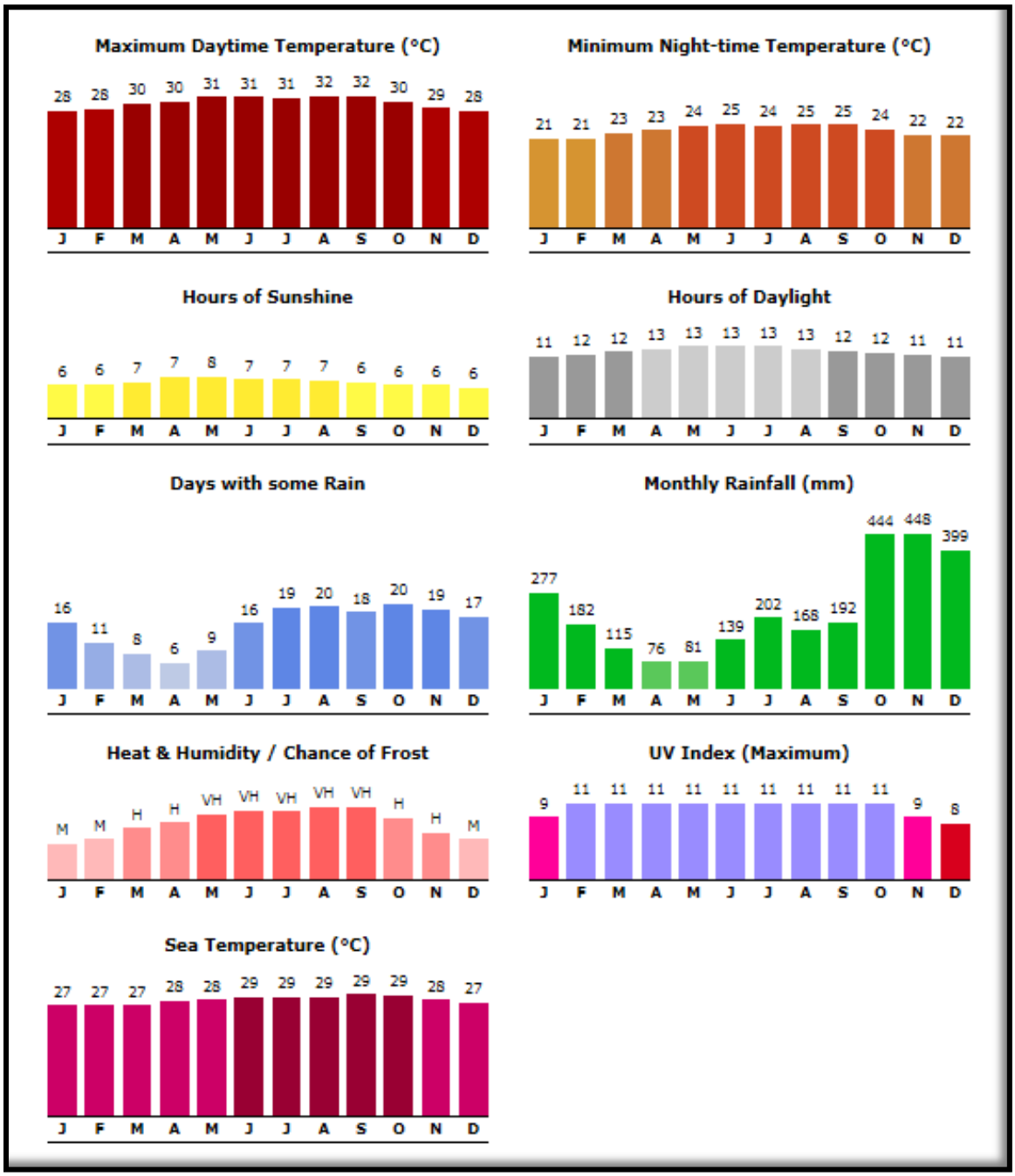


Figure 9: Rotan Climate Guide

Source: http://www.worldclimateguide.co.uk/climateguides/honduras/roatan.php

Flora and Fauna

Much of Roatan's island vegetation has been altered since first recorded by Christopher Columbus on his fourth voyage to the New World in 1502. Although Columbus and his crew did not provide detailed descriptions, they did mention the presence of pine trees on Guanaja and named the island "Isla de Pinos" or Island of Pines (Columbus, 1960). Although pines are still present, they have undoubtedly been depleted since this first account because of human needs, for ship building and house construction, and environmental destruction, especially from fires and hurricanes.

The warm temperature and heavy rainfall in Roatan support a wide variety of plant life and ecosystems. Today, as noted by the Bay Island Conservation Association, the main vegetation types include pine savannas on the higher ridges of Roatan and Guanaja and tropical dry forests, mangroves, and beach plant communities on the three major Bay Islands (Jacobson, 1992). Roatan's hills are covered with pine, cedar, and oak trees and thick tropical undergrowth. The island also boasts tropical forest areas which provide a home to a wide range of tropical species including fruit trees such as Hog Plum, Nance and Strangler Fig. Bromeliads, ferns, orchids, bamboo, and palms are also abundant. Despite the recent population increase, Roatan's north and east ends maintain their wilderness state because historically, people have lived off the sea and not by agriculture.

Roatan has many mangrove forests with Red, Black, White and Buttonwood Mangrove being the four common species of mangrove found. Mangroves play a key

role in protecting the coastal areas from storm and hurricane damage and are also important breeding grounds for the diverse marine life. This will be discussed further in Chapter three. Along the islands tropical beaches are a variety of plants such as Coconut Palms, Coco plums, sea grapes, almond trees and a variety of vines and bright flowering plants provide attractive color to the island's Caribbean beaches.

One third of the mammal species on the island are bat species; some of these are insect-eaters, and some are fruit-eaters, but both types serve an important role in the ecosystem by controlling insects, pollinating flowers and dispersing seeds (Weir, 2010). Other mammal species found on Roatan are Agoutis, which is a brown rodent that looks like a large guinea pig, and two varieties of rats. Opossum, white-tailed deer and wild pigs have been over-hunted and so they are now extremely rare. Manatee and monk seals were once found in the area, but now they are locally extinct (Weir, 2010).

There are around 40 different species of reptiles including endangered species of sea turtles such as the Hawksbill and the crocodile. The only poisonous species is the Coral Snake. The largest snake is the boa constrictor, which grows up to nine feet. These snakes are valuable because of their habit of hunting down and controlling the rat population (Weir, 2010).

Around 120 species of birds are found on Roatan. Forty of these species actually live and nest on the island, while the rest are migratory (Weir, 2010). Some of the regularly seen species include golden-fronted woodpeckers, osprey, the great-tailed grackle, several species of hummingbirds, and the yellow-nape parrot which is one of the more famous resident species and is listed as an endangered species in Honduras.

Of the migratory birds, the most common are warblers, vireos, tanagers and a variety of Caribbean Sea birds such as the White Ibis, Brown Pelican, Frigate Bird and the Roseate Tern (Weir, 2010).

Background Information: Roatan, Honduras

Honduras is the third largest country in Central America and the second poorest (CIA World Factbook, 2013). Important ecosystems such as rainforests, cloud forests and the southern extent of the Mesoamerican barrier reef, are located in Honduras (Mishra et al., 2005). The importance of these environments has been recognized worldwide. Ratification of various treaties and conventions has lead to the establishment of national parks and reserves. Strict legislation concerning the use of these resources has been established by the federal government - a significant one is the protection of mangroves. The monitoring and protection of these national parks, however, is backed by little funding which leads to poor enforcement. Corruption within Honduran government is high therefore illegal activities such as illegal logging of mangroves is a frequent event (Harborne et al., 2001).

Honduras is plagued by an extremely unequal distribution of wealth along with high underemployment. The Gross Domestic Product per capita is $3000, and close to 65% of the population is in poverty. Principal exports of Honduras are coffee, and fish and shellfish. Coffee is an especially important export, worth US $995.3 million annually (CIA World Factbook, 2013). The unsustainable practices of the coffee industry have led to large areas of deforestation and sedimentation of rivers and coastal areas (Harborne et al., 2001).

Although historically Honduras has been dependant on banana and coffee exports, it has recently diversified its export base which now includes apparel and automobile wire harnessing. Approximately half of Honduras's economic activity is tied directly to the United States, with exports to the US accounting for 30% of GDP (CIA World Factbook, 2013). The shrimp industry has been a growing sector as well and has an annual export value of US $697.1 million and many coastal areas are converting mangrove forests into shrimp ponds, to supply the demand for this product in America and Europe (Algoni, 2002). Other economic activities include raising bananas, cassava, coconuts, sweet potatoes, livestock, and fishing

Beyond the coffee and shrimp industries, tourism is an expanding industry in Honduras. It is estimated to be worth over US $450 million annually (Luxner, 2007). Between the years 1987, and 1991, the tourist industry within the Bay Islands grew at around 15% annually which far exceeded global trends (which were closer to 4 – 5%), (Harborne et al., 2001). More recently, there has been an increase of tourists arriving by cruise ships. Between 1999 and 2003, there was a 248% growth in the amount of cruise visitors to Honduras (Stonich, 2006). The rapid growth of the industry has resulted in development concentrated along coastal zones throughout the 1990s, particularly in the Bay Islands (Harborne et al., 2001).

The Bay Islands are heavily affected by mainland events. In 1998 Hurricane Mitch demolished large areas of the Honduran mainland, as mudslides due to the unsustainable practice of the coffee and timber industries devastated basic infrastructures (Harborne et al, 2001). At the time, the core activity of the Honduran

economy was banana plantations which were destroyed by the hurricane. This devastated the economy with an estimated loss of US $900 million in exports (Glantz & Jamieson, 2000). The destruction that occurred on the mainland was not felt as heavily in the Bay Islands where there was limited damage, but the damage from Mitch did lead to a substantial migration of poor and uneducated mainlanders seeking employment to the Bay Islands. As a Caribbean destination Island with relatively little damage, tourism within the Bay Islands was heavily pushed to help Honduras's economy. This push resulted in an increasing trend of cruise ships and backpackers traveling to the Bay Islands.

The lack of urban planning during this period has caused environmental degradation along with tensions between various stakeholders on the island. The migration of the mainland Hondurans along with tourist-residents has created population pressures on infrastructure and basic services such as freshwater. Terrestrial development generated by the recent tourism boom has been largely unregulated, and the aquatic environment has been degraded. Many of the new roads on the islands are unstable and promote widespread erosion, siltation of offshore corals, and deterioration of streambeds and watersheds (Stonich, 2006). Shoreline construction of hotels, restaurants, marinas, beaches, housing, and more recently cruise ship docks has destroyed mangroves and corals. Hundreds of wells have been dug indiscriminately leading to saltwater infiltration of groundwater, disruption of groundwater flows and diminished stream quality (BICA [Bay Islands Conservation Association], 2009).

Despite increasing population levels, tourist influx, and widespread building construction, many residents on the island do not have adequate drinking water or sanitation systems. Many residents lack a sewage disposal system all together and others use latrines that empty directly into the sea. Even where septic fields or tanks exist, leakages frequently allow contaminated sewage to seep into groundwater or the sea. Eutrophication of near-shore waters and human health risks from fecal coliform bacteria in drinking water and around dive sites are of pressing concerns since they threaten the health of the reef and the attractiveness of the islands as a tourist destination.

Roatan's economy depends on the reef that surrounds for tourism and fishing revenue. This impressive reef has been designated a World Heritage Site by the United Nations Educational, Scientific and Cultural Organization (UNESCO) (Moreno, 2005). The extensive coral reef system that surrounds the island of Roatan, supplies a keystone habitat for fisheries and as mentioned previously is the main attraction for the prospering tourism industry as most of it is devoted to diving and snorkeling.

Roatan's Cultural History

The history of the Bay Islands and the mainland of Honduras differs greatly. Bay Islanders are descendants of both Afro-Caribbean peoples and white British pirates, with limited mixing of the two groups. Both groups have traditionally shared coastal waters as fishing grounds, while personal territories have been secured on a very unofficial basis (Moreno, 2005). Four centuries of Anglo-Hispanic conflict in the Western Caribbean between these groups led the Honduran government to encourage

tourism on the islands in the late 1990s in order to integrate the islands into the mainland politics, economy, society, and culture (Stonich & Sorensen, 1998).

The Garifuna are the main ethnic group on the island. They originated on the island of St. Vincent in the 17th and 18th Centuries when slave ships from West Africa wrecked near the island (UNESCO (United Nations Educational, Scientific and Cultural Organization), 2001). The survivors mixed with the island inhabitants who were a mix of Carib and Arawak Natives and developed into the Garifuna. During the 1700's, territorial land disputes between the British, the French and the Garifuna led to warfare. Defeated by the British in 1797, the Garifuna were exiled to the island of Roatan (Stonich & Sorensen, 1998). The Garifuna language, dance and music were given the "Proclamation of Masterpieces of the Oral and Intangible Heritage of Humanity" by UNESCO in May of 2001 (UNESCO, 2001). The culture of the Garifuna include distinctive forms of popular and traditional expression, such as language, oral literature, music, dance, games, mythology, rituals, costumes, craftwork know-how, and architecture. They have specific places and times set up where they get together to perform their music, dance, games, etc. (UNESCO, 2013).

These unique cultural rituals can provide an attraction that draws tourists from the West End to other parts of the island. This must be done cautiously however. Currently, the culture and livelihood of the Garifuna are being challenged. The increase in tourism has led to western influences and an increasing loss of language. Overuse of the islands natural resources and pollution have affected the Garifuna as well. Despite

their World Heritage Culture status, many of the Garifuna live in extreme poverty with challenges such as health care and education (UNESCO, 2013).

The Honduran Coral Reef Foundation (HCRF) introduced a management plan, in 2004, with several objectives that affect the Garifuna. These include monitoring the biodiversity of the reef and fish, investigating the potential for developing sustainable alternative income for the local communities, and assessing the environmental and cultural impacts of development within the area (Honduran Coral Reef Fund (HCRF), 2005). In order to fund these objectives a fee has been introduced to people visiting the area (Table 1). However, no Garifuna organizations were present at the meeting determining the rate of fees.

Table 1: Entrance Fee Schedule to Cayos Cochinos Marine Protected Area

	One day	One Month	One Year
Foreign visitors	$10	$20	$40
With Tour Operators	$5	$10	$20
Honduran Nationals	$2	$4	$8
Licensed Captains and Guides	No Cost		

(Source: HCRF website)

Some deterrents of tourism that Honduras shares with its many other Central American neighbors has been its past and in some cases recent reputation of political and social violence and crime. This negative image turns many people who are concerned for the safety away. For this reason, many have played a part in trying to break the barriers created by the “enclave tourism” that goes on in this part of the world. Locals also worry about property crime going up during peak tourism seasons.

The next chapter will discuss the literature on tourism starting with global moving to the Caribbean region and then focusing on Roatan, Honduras. The focus will then shift to Scuba diving starting with the historical background and then moving to scuba diving tourism globally, regionally and finally in Roatan, Honduras. Lastly, chapter three will look at the source of scuba diving tourism: coral reefs and the essential functions they provide for both nature and humans as well as how they are affected by human use and what is being done to preserve them.

CHAPTER

3. LITERATURE REVIEW

Tourism in Central America and the Caribbean

Some developing countries have been very active in promoting tourism and have been quite successful. Among these countries are several from the Central American regions, such as Costa Rican And Panama where tourism accounted for more than eight percent of GDP in 2006. Tourism contributes more than 30% GDP in 10 countries or territories within the Caribbean and one in every six Caribbean worker is directly employed in tourism (World Trade Organization, 2006). In 2012 the Caribbean added over 25 million tourists, 5.4% more than in 2011 (United Nations World Tourism Organization (UNWTO), 2013). This rate of growth outpaced the rest of the world with an increase in arrivals of four percent. In Honduras, tourism increased 10 percent in 2010, which is above the world average annual increase of 8 percent (WTO 2010).

Tourism in Roatan

The amount of people living below the poverty line and the unemployment rates in Honduras on the Island of Roatan where this study takes place is staggering. While people on the west side of the Island reap the benefits of tourism and make a comfortable living, people on the east side of the island have poor living conditions, little access to water and emaciated children. The majority of Islanders and Latinos have low status and low paying, temporary jobs. They have reduced access to the natural resources on which they depend for their livelihood, while there is an increase in

outside ownership of local resources. There is also a large differentiation of the biophysical environment in these regions. Tourism has lead to increased social segregation between three main regions on the Island**:** West End, Sandy Bay, and Flower Bay. Investigating how to better spread the wealth that the tourism on this island generates, this Island would provide an opportunity for more comfortable living, and a chance at better nutrition, education, and jobs.

Before tourism became a primary focus on the island of Roatan, one of the first jobs which resulted in mainly shrimp, lobster and fish as exports (World Trade Organization, 2006). Over time the introduction of fishing restrictions and quotas along with large-scale fishing organizations which reduced fish stocks, slowed the fishing boom. Roatan's economy became largely undiversified due to their prior dependence solely on the fishing industry and tourism became the islands economic moneymaker. As tourism expanded, the amount of people working and the fallout from development had a negative effect on the fishing and agriculture industries further slowing them down. In fact, the Bay Islands and Roatan in particular, became the most popular tourist destination in the country. From 1990 to 2000, the number of tourists grew from 10,000 to 90,000 per year (Instituto Hondureño de Turismo, 2001).

Between the years of 2010 - 2012, Roatan exceeded world tourism growth with a 20% increase. In 2010, Honduras received more than 800,000 cruise passengers and approximately 301,330 cruise passengers in the first quarter of 2011, representing an increase of 29.5 compared to the same period of 2010. This promising increase

continued in 2011 with two ports receiving about 317 Roatan cruise ships, with about 927,972 passengers (Growth in the Tourism Industry (Present & Future), 2012).

As in other places, Roatan has had trouble with revenue leakage. The country's Supreme Court promulgated a regulation in 1990 on the Law on the Acquisition of Urban Real Estate in Areas Delimiting Article 107 of the Constitution, commonly known as Decree 90/90 (Mauri, 2004). This makes real estate on 100 percent of Honduras' surface land area available for purchase by foreigners. The amount of land foreign individuals can buy for pre-approved tourism purposes is unlimited and they are allowed up to three-fourths of an acre for personal use. Foreigners regularly get around these limits however, and buy up large chunks of land for personal use since the government chooses to look the other way (by doing this they profit from the foreign company's tourism sales). This has driven land prices up making it more difficult for local ownership of businesses or personal use.

The promotion of tourism in Honduras began when the Central American Bank for Economic Integration, in conjunction with the U.S. Agency for International Development's regional office for Central America, commissioned the Porter International Company to do research on promoting and developing tourism in the Central American region in the mid 1960's. The focus of this venture was on three separate physical and cultural geographical areas: the Mayan archeological site of Copán, the beaches and colonial history of the North Coast, and the coral reefs of the Bay Islands. As ecotourism became globally popular in the 1990s *La Mosquitia* and the *Río Plátano* Biosphere Reserve were added (Rivas, 1990).

Scuba Diving

Tourists are increasingly seeking out interactions with marine mammals, including various cetacean species such as whales, dolphins and porpoises and pinnipeds such as sea lions and seals. These interactions can take place in captivity, semi-captivity or in the wild (Marine Mammals, 2013). In the wild, these types of encounters tend to take place within the context of a scuba-diving session where participants are usually equipped with snorkel, mask and fins, and then dropped into the water alongside the animals. This desire to encounter and interact with free-ranging marine mammals is intensifying in tourist locations around the world.

The exploration of the sea began with man searching for food which later led to commercial explorations for sponges, oyster pearls and seashells. Sponge diving was a great source of economy, but it was very difficult and dangerous work for the divers. Small boats brought divers out to sea where they would use glass bottom cylinders to spot the sponges on the ocean floor. To provide for a quick decent, a stone was roped to the boat and once the divers reached the ocean floor, they would gather sponges into a net for as long as they could hold their breath. Early dives consisted of holding one's breath diving to depths of up to 100 ft and they could stay under for three to five minutes. Evidence of this breath-hold diving dates as far back as 3,000 BC and earlier and can be seen in drawings and in ornaments and other artifacts made from mother-of- pearl and other seashells (Gallant, 2009).

Military exploits also involved divers. Historical documents and drawings show divers performing underwater operations in the 5th century BC, during the Persian wars, in the siege of Tyre in 332 BC, and at other battles (Gallant, 2009). In his work

Problemata, Aristotle writes about Alexander the Great going underwater in a diving bell during the siege of Tyre. This is also depicted in a 16th century painting of Alexander the Great while being lowered in a glass diving bell. Around 100 A.D., the business of underwater recovery was so well organized that a salary rate was established: at 26 ft, a diver could keep half of what he recovered; at 13 ft, one third; at three feet, one tenth (Gallant, 2009). Limited by the air the lungs could hold, staying submerged for long periods required the invention of devices that made air available underwater. This is when the diving bell came into play.

Amateur recreational diving started mostly with enthusiasts in Italy and the south coast of France who were devoted spear fishermen. Starting with breath-hold diving this area was also where compressed air scuba diving developed. Several inventors in the 19th century developed self-contained diving apparatuses, but it was not until the 20th century that diving became a sport due to William Dunn's invention of the diving hood in 1915. This allowed access to the underwater world without the bulky complicated and expensive diving equipment (Gallant, 2009).

The thrill to dive even deeper has been a continuous driver of dive research. By the beginning of the twentieth century, diving research had permitted divers to reach depths of over 90 meters. At this point, the narcosis induced by nitrogen incapacitated most people. During the 1920s, and 1930, research into the use of helium in recreational diving was introduced. Between the two world wars the USA had a virtual monopoly on the supply of helium, and so dominated research into deep diving (Gallant, 2009). By the end of the 1930s, divers had reached a pressure equal to a depth of 150

meters in a compression chamber, while a dive to 128 meters was made in Lake Michigan. Subsequently gas helmets replaced older equipment reducing the amount of gas used and allowing operation to depths over 450 meters (Gallant, 2009).

Development of diving goggles, masks, fins and snorkels in the 1930s made diving available to everyone. The Aqualung or Self Contained Underwater Breathing Apparatus (SCUBA), co-invented by Jacques Cousteau and Emile Gagnan while redesigning a car regulator in 1943, opened the door to the sport diver as seen today (Larwence, 1997). They developed the first workable, open-circuit demand-type scuba apparatus. This form of sport diving quickly spread to Great Britain, then Canada, and then to the U.S. and then to the rest of the world. In the 1950s, the sport of diving slowly changed from breath-hold to primarily scuba and dive stores open up all over the U.S. A new diving record is made to 13,287 ft (Marinebio.org, 2013). Shortly after, Scuba instructors began to establish themselves in the U.S. In 1957, the television show SEA Hunt aired and the underwater adventure series inspired thousands of people to take up scuba diving. In the 1960s, YMCA started the first nationally organized scuba certification course. In the 60s however, scuba diver accident rates began to rise resulting in the formation of the first international training agencies to train and certify divers. NAUI was formed in 1960 and PADI (Professional Association of Diving Instructors) in 1966. In the 1970s, important advances that were made in scuba safety in the 1960s became widely implemented. These included the adoption of certification cards to indicate a minimum level of training and as a requirement for tank refills renting scuba equipment; the change from J-valve reserve systems to non-reserve K

valves and the adoption of submersible pressure gauges; and the adoption of the buoyancy compensator and single hose regulators as essential pieces of diving equipment to replace the dual hose equipment initially widely used (Larwence, 1997). The Orca Edge, a commercially available dive computer, was introduced in 1983 and in the following decade became common equipment among recreational divers. In 1985, a U.S./French team found the wreck of the Titanic using a remote controlled camera attached to the surface ship. This inspired exploration and wreck diving for treasure (Marinebio.org, 2013). The 50th anniversary of the invention modern scuba diving was celebrated in 1993 around the world. This beginning, when associated with tourism and photography, portrayed diving as an exciting sport through cave and shipwreck exploration or a leisure sport through gazing at amazing fish and ocean creatures at the diver's own pace.

Today in the U.S., recreational diving is a multi-billion dollar industry. It is estimated that 500,000 new scuba divers are certified each year in the U.S. (Marinebio.org, 2013). Scuba travel has been transformed into a big business. New scuba magazines, more sophisticated dive computers, and new liveaboards (vessels where divers stay on board overnight or a series of nights for continuous diving), are now available for all types of divers. PADI has become the world's largest recreational diving membership organization followed by NAUI (Marinebio.org, 2013). These professional organizations provide opportunities to the public to be certified to explore underwater, with goals to focus on dive training safety and customer service. The highest concentration of divers is in the Netherlands where currently one in every seven

person is a certified diver. Recreational diving is closely connected to exotic travel and both are experiencing an increasing popularity.

It is predicted that the diving industry will continue to grow as more and more people take up scuba diving and the ones that already are, will continue to explore new destinations and challenges such as deeper diving, technical diving, free-diving and cave-diving (Marinebio.org, 2013). The equipment continues to get better, easier to handle, and lighter. Many divers are diving on a rebreather - a breathing apparatus that absorbs carbon dioxide from the user's exhaled breath to permit recycling of the unused oxygen in each breath. Oxygen is added to replenish what is metabolized by the user. As this becomes safer, many more will follow, but as of now it is not widely accepted due to the amount of accidents recorded by the press.

Dive Tourism

Diving has been a recreational activity for at least 75 years. Basic forms of diving, such as breath-hold diving and snorkeling, require a minimum of equipment usually including only a mask, snorkel, fins, and some weight. In contrast, scuba diving involves portable air supplies to remain underwater for longer periods of time and to attain greater depths. SCUBA is an acronym for 'self-contained underwater breathing apparatus', but the term is now so well known that it has been adopted by many languages as a simple noun (scuba diving, scuba equipment, etc.). According to The World Tourism Organization (WTO), scuba-diving tourism is defined as comprising "persons travelling to destinations with the main purpose of their trip being to partake in scuba diving. The attraction of the destination is almost exclusively related to its dive quality rather than any other factor, such as the quality of accommodation or land-

based attractions" (World Tourism Organization (WTO), 2002). The World Tourism Organization (2002) proposes that one-in-three scuba divers regularly take an overseas holiday, mostly with the intent of diving the world-class sites such as Sharm El Sheikh on the Red Sea, The Caymans in the Caribbean, the Seychelles and the Maldives in the Indian Ocean, or the Australian Great Barrier Reef.

The roots of scuba diving began after World War II. A considerable and unabated growth in the popularity of scuba diving was evident throughout the second half of the twentieth century. Undoubtedly, the increase in international tourism played a key role in the growth of the popularity of diving which allowed enthusiasts a wider range of locations and times of the year than had been possible when restricted to diving in their home locality as was previously the case. Many divers reside in developed countries in the northern hemisphere, over one-third being European, and many others are from the United States. The majority of 'world-class' diving locations however, are in the tropical regions, particularly where coral reefs are present.

International travel is therefore a very large part of how divers tend to assess their recreational opportunities. Quantification of the volume and value of diving activities worldwide is inadequate as there is a scarcity of data in general and, more specifically, dive tourism at the national, regional and local levels. One of the issues with collecting data on diving tourism is that diving demographics are extremely diverse. Diving tourists vary widely in demographic backgrounds and socio-economic status, previous experience of diving, needs and expectations, the ways in which they approach the diving tourism product, and in many other respects.

In its 2002 tourism forecast, the World Tourism Organization stated that scuba diving is one of the fastest growing sectors of the tourism trade and this claim is validated by the certification statistics of dive organizations (WTO, 2002). Divers make up around 10% of all visitors to Caribbean locations, but contribute about 17% of all tourism revenue spending on average around US$2,100 per trip compared to $1,200 for tourists in general (Burke et al., 2004). WTO (2006) reports that locations around the world are consequently trying to tap the diving tourism market and establish themselves as international diving destinations. According to PADI, there are over 10 million divers in the United States and most of them must travel away from home to find a pristine diving environment. PADI also estimates that some 600,000 new divers are certified every year, representing a growth rate of about 6% (PADI, 2013). Technological advances enabling marine craft to access remote scuba diving sites with more ease, and the growing interest in learning about and experiencing natural environments have also led to this increase (Ong & Musa, 2011).

Dive Tourism in the Caribbean

According to the Caribbean Tourism Organization (CTO) (2012), Canada outpaced the U.S in 2011 with arrivals in the Caribbean up 6.8% over 2010. Arrivals from the U.S. were up 1.7% in 2011. Anguilla, Barbados, Belize and Curacao registered the highest increases from U.S. travelers, followed by Aruba (Caribbean Tourism Organization, 2012).

Diving off the Western Caribbean is especially interesting as it covers many atolls, islands and nations. Each group is different. Most have tourism, but there are also many with un-dived areas of reef only accessible by live-aboard boats. The most

well-known, prominent diving in the western Caribbean is in Belize and the Bay Islands of Honduras. The Bay Islands are renowned for their concentration of invertebrate life. Many of the coastal villages are only accessible by boat and are not linked by roads. Manta Rays and other large pelagic fish are seen regularly in these reefs. Providing ideal island getaways, close reefs, walls, and wrecks for divers, Caribbean diving was established as a first-rate industry that has become legendary in the scuba diving world.

Between one and two million people depend directly on this region's marine resources for their livelihoods (World Wildlife Fund (WWF), 2013). Roatan has a fringing reef system that extends directly from the shoreline. This is preferably to divers as some of the best sites are only minutes away from the shoreline. The four main zones in the reef are: lagoon, reef crest, fore reef, and drop-off.

Dive Tourism in Roatan

Roatan's diving courses are some of the cheapest in the world. Courses usually take three to four days with open water certification including two confined-water and two open water dives. Trained, multi-lingual dive masters, instructors, and PADI-certified diving companies are available on the island. Many of the experienced dive masters and instructors on the island were trained under the NAUI system and all worldwide certifications are recognized. Prices range from $250 to $325 for packaged dives (ten dives) and $25 and up for single tank dives. Rental gear is usually included although most devoted divers bring their own equipment. A lot of the resorts are located in the Roatan Marine Park. This park, discussed in greater detail later in this chapter, plays a crucial role in protecting the reef surrounding the island. Divers are strongly encouraged to pay a voluntary user fee at their dive shop or the marine park

office of $10 a year or $3 a day. This money is used to pay for park moorings, patrols, public awareness, and education, among others.

The lagoon begins at the shoreline and expands to the breakers over the reef crest. Here, there are fields of turtle grass and algae which perform as lungs for the reef system. This shallow, sun-soaked zone provides homes to the young of many aquatic species. Small lobsters, angelfish, barracudas, butterfly fish, and reef squids reach maturity in the lagoon zone as they are safe from bigger fish competitors on the reef.

The reef crest is a complex coral structure that rises to the surface where it is constantly bombarded by shifting tides and strong waves. Staghorn, elkhorn and other stony corals have adapted to this struggle through the use of branching structures to dissipate the surf and sea fans which are soft gorgonians, roll with the waves. Towards the sea, the reef crest quickly changes into a sequence of sand and rubble patches. Schools of surface-feeders such as sergeant majors and chubs along with an assortment of agile crustacean life forms make this interior wall their home (WWF, 2013).

The fore reef is formed by large boulder and plate corals whose heads join together into definite ridges. Damselfish, squirrelfish, and fairy basslets are provided shelter through its intertwined limestone structures built by colonies of staghorn and lettuce corals. Sponges in this region provide food for turtles and the comparatively shallow depths of the fore reef offer plentiful sunlight for supporting a multitude of marine life. Most diving occurs in this heavily populated luminous stretch of the reef (WWF, 2013).

The reef spectacularly thrusts into the blue abyss at the drop-off zone. The wall displays flowing, overlapping shelves adorned with plate corals. Other corals, such as deep-water soft corals such as black gorgonians and wire coral, elongate their wiry frames away from the wall. Marine life is not as dense as the fore reef as it hosts mainly larger reef fish and free-swimming pelagic species like groupers, barracudas, ocean trigger-fish and eagle rays.

Within these zones, there are an estimated 176 dive sites around the island. The sites range from beginners to advanced. There are around 82 easy sites, 72 advanced sites, 12 expert sites, and 10 technical sites. Some of the more popular dive sites are Hole in the wall, el Aguila Wreck (the Eagle), Spooky Channel, Mary's Place, Bear's Den, Blue Channel, Mandy's Eel Garden, West End Wall, Texas, and Peter's Place (Marinebio.org, 2013).

Importance of Reef Systems

Key services of Estuarine and Coastal Ecosystems

Every year, millions of people visit coral reef ecosystems to experience the beauty and bounty of healthy coral reefs. In the United States alone, coral reefs support millions of jobs and billions of dollars from tourism related activities. A 21st century scuba diving environment is economically important to tourism destinations, draws from advances in technology, involves multifaceted management approaches, and has relevance in discussions of climate change and environmental sustainability. These are

just a few of the reasons why coral reefs are so valuable and why it is so important for us to protect the world's vulnerable coral reefs (Barbier et al., 2011).

Coral reefs are a part of a much larger system. Globally, ecosystems, and the number of critical benefits they provide, have been affected by the decline in Estuarine and Coastal Ecosystems (ECEs). They are some of the most heavily used and threatened natural systems (Barbier et al., 2011). Main ecological systems include mangroves, marshes, sea grass beds, sand beaches, dunes, and near shore coral reefs. For many of these systems, ecological services have yet to be valued reliably including cross-ecosystem nutrient transfer from coral reefs, erosion control from marshes, and pollution control through mangroves. Mangroves, for example, provide invaluable ecosystem services as they are the primary defenses for coastal erosion especially during storms and hurricanes, yet they are one of the most threatened ecosystems in the world. They also provide sediment binding and stabilization, bio-filtration, and wave dissipation (National Research Council (NRC), 2005).

The U.S. Environmental Protection Agency (2005: 12) defines Ecosystem Services as "…the direct or indirect contributions that ecosystems make to the well-being of human populations". One of the driving issues for trying to value some of these ECE services is that the ecological functions underlying these services vary spatially and temporally. Allowing for the connectivity between ECE habitats may also have significant implications for evaluating the ecological functions fundamental to key ecosystem services.

Human activities have increasingly led to intense deterioration of Estuarine and Coastal Ecosystems. The tourism and recreation benefits that take place through interacting with an ECE can be considered the product of a service provided by that ecosystem. When attempting to estimate the value of this ecosystem service in producing recreational benefits, it is important to take into account only the value estimates that look at the effects of changes in the ECE habitat on the tourism and recreation benefits and not the additional influence of any human input. The same is true for ecosystem services such as coastal protection, erosion control, nutrient cycling, water purification, and carbon sequestration, which may benefit human well-being without any additional human-provided goods and services. This provides a number of challenges to overcome when it comes to ecosystem valuation, and while considerable progress has been made in valuing a few of ECE services, there remains a large amount of these services that have very low reliable valuation estimates.

Some economic valuation studies have been broader-based attempts to quantify the diverse ecological services or "total economic value" of coral reefs. These studies estimate that the total economic benefits from coral reefs have ranged from around US$100,000 to US$6,000,000 per sq km of coral reef. The largest share of this was associated with tourism and recreation followed by shoreline stabilization services (see Table 2 on the next page).

Table 2: Key Interrelated steps in the valuation of ecosystem goods and serves

RANGE OF ESTIMATED ECONOMIC VALUES OF SHORELINE PROTECTION SERVICES PROVIDED BY HEALTY CORAL REEFS IN THE CARIBBEAN IN 2000				
Level of Shoreline Development	**Definition of Development**	**Percent of Coastline**	**Value for Reef-Related Shoreline Protection Services (US$ per km of coastline)***	**Total value of Reef-Related Shoreline Protection Services (US$ million)**
Low	Fewer than 100 people within 5 km	29	2,000-20,000	10-30
Medium	Between 100 and 600 people or a dive center located within 5 km	27	30,000-60,000	120-150
High	More than 600 people within 5 km	44	100,000-1,000,000	620-2000
TOTAL		**100**	**2,000-1,000,000**	**750-2180**
SOURCE: Estimates developed at WRI (2004). Technical notes on methods and data sources available online at http://reefsatrisk.wri.org NOTES: *Because only a few shoreline segments are likely to be at the high extreme of value, ranges were developed as follows: Low = 100 % of shoreline is at low end of value range; High = 75% at low end and 25 % at high end of value range.				

Source: This figure is adapted from the National Research Council website.

The visual magnificence of the region's coastal areas makes it a primary tourist destination. This, however, puts heavy demand on fragile reef environments. Further inland, rich soils attract large-scale agriculture whose run-off can severely impact reefs. Corals and other marine animals such as turtles, as well as the communities that depend on the reef for their livelihoods and food security are further threatened by increasing sea levels and water temperatures due to climate change (Barbier et al. 2011).

Recently, attention has been focused upon coral reefs worldwide due to an increasing use of these natural environments and their associated ecosystem services. Reefs supply a number of ecosystem services to humans including raw materials, coastal protection, maintenance of fisheries, nutrient cycling, tourism, recreation, education, and research (Barbier et al. 2011). For centuries the resources of the coral reef have

been exploited, used as important fishing grounds, and utilized for building materials, and consequently their role in coastal protection has allowed human settlement in otherwise inhabitable areas (Algoni, 2002). They can form near shore and extend hundreds of kilometers in shallow offshore environments. Algae play an important role in the stabilization of the structure of coral reefs. The community composition of reefs depends on global, regional, and local factors which interact to produce the wide variety of coral reefs present on earth (Hughes et al., 2005). Coral reefs are also essential for maintaining fisheries. They provide shelter for smaller organisms and food sources for larger organisms. Increases in fishing technology and transport have transformed reef fisheries that initially functioned solely for subsistence into commercial operations that serve international markets (Barbier et al. 2011). The commercial value for these fisheries can be significant for some economies.

Coastal protection or buffering of shorelines for severe weather is one of the key ecosystem services of coral reefs as it shields coastal human populations, property and economic activities. By changing the physical environment such as reducing waves and currents, corals can engineer the physical environment for entire ecosystems, making it possible for other coastal ecosystems, such as seagrass beds and mangroves to develop, which in turn serve their own collection of services to humans. Despite the significance of this coastal protection service, very few economic studies have estimated a value for it. However, the extensive reef destruction caused by disastrous events and global climate change, such as hurricanes, typhoons, and coral bleaching, provides some indication of the value of the lost storm protection services. For example, as a result of

the 1998 bleaching event in the Indian Ocean, the expected loss in property values from declining reef protection was estimated to be US$174 hectares per year (Pratchett et al., 2008).

In addition, coral reef ecosystems perform important services by cycling organic and inorganic nutrients. Reefs contribute significantly to the global calcium carbonate budget and they transfer excess nitrogen production from cyanobacteria and benthic microbes on the reef to the water column environment as well. This process is the main reason reefs have such a diversity of organisms. This same abundance of marine life provides a compelling activity for tourists. The economic value of scuba in the Similan Island coral reefs in Thailand for example, was estimated in a study on divers' attitude toward the quality of the dive site, frequency of dive trips, and socioeconomic characteristics, including whether divers were Thai or foreign. In this study, a consumer surplus value of $3,233 per person per dive trip was estimated (Mumby et al., 2008).

Despite the aforementioned ecosystem services, along with many others, coral reef ecosystems are threatened by irreversible decline due to anthropogenic processes. Local stressors include over fishing, dynamite or cyanide fishing, pollution, mining, eutrophication, coastal development, dredging, sedimentation, and biological invasion (Hoegh-Guldberg, 2007). It has been estimated that 30% of the world's coral reefs have been destroyed. The overall estimated economic damages from lost fisheries production, tourism and recreation, coastal protection, and other ecosystem services from the 1997 Indian Ocean coral bleaching event have ranged from $706 million to $8.2 billion (Wilkinson et al. 1999).

The connectivity of ECEs across land-sea gradients also influences the provision of certain ecosystem services. Management of the entire seascape will be necessary to preserve such synergistic effects. Mumby (2006) argues, for example, that the management of ECE habitats in the Caribbean should consider the life cycle migration of fish between mangroves, seagrass beds, and coral reefs. He recommends that management planning should focus on connected corridors of these habitats and emphasize four key priorities: (1) the relative importance of mangrove nursery sites, (2) the connectivity of individual reefs to mangrove nurseries (3) areas of nursery habitat that have an unusually large importance to specific reefs, and (4) priority sites for mangrove restoration projects. Similarly, Meynecke et al. (2008) emphasizes that to improve marine protected areas, it is important to understand the role of connectivity in the life history of fishes that likely utilize different ECEs.

According to Global Ecologist Ken Caldeira from Stanford University (2013), the burning of fossil fuels and the increase of carbon dioxide in the air are causing the oceans to become more acidic. Carbon dioxide reacts with sea water and turns into carbonic acid. The oceans are now 30% more acidic than they were before the industrial revolution. In an interview on National Public Radio's Environment Report Program, Caldeira states that, "This is a scale of change that hasn't happened since the dinosaurs became extinct, so we are making radical transformations to ocean chemistry that go far beyond what most organisms have experienced in their evolutionary history" (Caldeira, 2013).

Many coral reefs were wiped out the last time this happened, 66 million years ago. Ocean chemistry recovered in about ten thousand years. Minerals flowing down rivers and into the sea corrected the acid balance in the oceans. But Caldeira's Ph.D. work back in the 1980s showed that it took hundreds of thousands of years for reefs to recover. This is affecting coral reefs and scientists claim that in a matter of decades, ocean water could become so corrosive that reefs may start dissolving faster than the coral can grow.

Currently scientists like Caldeira and others are experimenting to see if they can find a way to neutralize some of this increased acidity in order to help the coral grow faster by pouring antacids into the water. The reefs are better able to absorb the minerals they need when the water is less acidic (Caldeira, 2013).

Caribbean Marine Protected Areas

The International Union for Conservation of Nature (IUCN) is the largest conservation network in the world. It is funded by a variety of contributors: governments, bilateral and multilateral agencies, foundations, member organizations and corporations (IUCN, Task Force Governance Equity and Livelihoods Rights, 2007). The IUCN defines Protected Areas as "… an area of land and/or sea especially dedicated to the protection of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means" (IUCN website, 2012) Among several other programs and commissions, the IUCN is in charge of the Protected Areas Program. Ecologists view Protected Areas as one of the most important tools for the conservation of Biodiversity as they allow for the conservation of fractions or entire natural landscapes or ecosystems and their associated plants and animals.

Characterized by rapid growth over the past 15 years, diving tourism has caused increasing pressure on the marine environment in a number of dive destinations. Although divers are not the sole cause of environmental change in marine ecosystems, they can be significant factors of disturbance and destruction. Dive centers along with dive schools and tour-operators associated with them have a central function in the management of diver behavior. They are responsible for providing information on environmentally harmful activities and they actively influence diver behavior under water, both through the training and intervention by divers. This often means a balance between economic and ecological goals needs to be achieved. In other words, the maximization of diver numbers can be at odds with the minimization of environmental impacts.

Marine Protected Areas (MPAs) are a specific type of a Protected Area that Kelleher and Kenchington (1992: 13) define as "any area of intertidal or sub-tidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features which has been reserved by law or other effective means to protect all or part of the enclosed environment". In other words, MPAs contain valuable economic resources that are important to local and national economies. MPAs consist of a complex mix of governing arrangements guiding human interactions with the natural environment. Throughout the wider Caribbean, MPAs are rapidly gaining momentum as a conservation tool. Careful management can allow both protection of biodiversity and economic development. Central to their sustainable management is a balance between use of resources for ecological and economic functions.

Marine Protected Areas provide economic benefits such as job creation through harvest of renewable and nonrenewable resources like fish and shells and the use of MPAs for noncomsumptive activities like tourism and recreation. The economic value of biological resources and environmental services such as wave-buffering by healthy reefs is also provided by MPAs but are more difficult to quantify in monetary terms. In addition to having many benefits and services to society, the main benefit of MPAs is the support given to local and surrounding fisheries. These areas provide protection and a breeding site for commercial species which helps to increase degraded fish, marine flora and fauna, and seafood stocks. MPAs also safeguard the physical habitat structures from anthropogenic impacts (Mora et al., 2006). Ideally, MPAs can effectively protect marine biodiversity while still generating important economic benefits from recreational and tourism uses. The management of MPAs however is key. Compared to gross economic benefits associated with and directly dependent on the park, park-management costs are small. Park-user fees, levied either directly on users or on firms that organize use, are used by many MPAs but are often resisted at others.

Commonly, an early warning of large-scale degradation is localized overuse within an MPA. Planning coastal and marine development so the local economy retains a larger share of the economic benefits is important. This allows increasing economic benefits, and the share that remains in the local economy, without always increasing the number of visitors. Even with good management, and enlightened divers and other users, there is a maximum level of both ecological and economic sustainable MPA use. This maximum sustainable-use level may be lower than that desired by local

governments or business interests, but it must be respected for marine protected areas to continue to meet both ecological and economic goals.

Unfortunately, ineffective management of protected areas can further threaten Caribbean coral reefs. Over 285 MPAs have been declared across the Caribbean, but the level of protection afforded by MPAs varies considerably (Mora et al., 2006). The Reefs at Risk Project funded by the World Resources Institute, found only 6 percent of MPAs to be rated as effectively managed and 13 percent as having partially effective management (Burke et al., 2004).

Shoreline protection is necessary as it receives important shoreline stabilization services from coastal ecosystems. The growth of mangroves and seagrasses is encouraged by the lagoons and sedimentary environments available from the dissipation of the waves by coral reefs. The mangroves and seagrasses help to connect marine and terrestrial sediments which decrease coastal erosion and supports clear offshore waters favorable to corals. Often times, decision makers under value the shoreline protection services available through natural landscapes and do not weigh these services appropriately when deciding on development options. One reason for this oversight is that planners have difficulties quantifying these services. However, Richmond et al. (2007), reports that the value of shoreline protection can be approximated by estimating the cost of replacing this service through artificial means. Efforts and investments to stabilize shorelines artificially have been substantial in many parts of the world.

The vulnerability of coastal areas to erosion and storms varies with topography, substrate, habitat types, coastal morphology, and climate. In the Caribbean, hurricanes and tropical storms are a major cause of acute erosion. Sandy beaches are much more vulnerable to erosion than rocky shoreline. Increased development in coastal areas often amplifies erosion and storm risk. This is shown through the destruction of natural habitats such as mangroves, seagrasses, and coral reefs but also coastal vegetation. This destruction exposes coastal sediments to greater movement, thus resulting in erosion and loss. In addition to habitat destruction, the development of the physical infrastructure to protect areas can, in and of itself, enhance erosion. For example, the building of sea defenses and the canalization of water courses often leads to changed patterns of coastal water movements, with resulting erosion in adjacent areas. In the Eastern Caribbean, studies of changing beach profiles showed that between 1985 and 1995, seventy percent of monitored beaches eroded (Whitehead et al. 2008).

To analyze the economic role of shoreline protection services provided by the Caribbean coral reefs, Reefs at Risk in the Caribbean studies, done by Burke et al. (2004) from the World Resources Institute, have estimated the scope of the region's shoreline protected by coral reefs, the value of the shoreline protection services provided by these reefs (based on costs required to replace them by artificial means), and potential losses in the annual benefits of shoreline protection services due to reef degradation. Using data on shoreline and coral reef location, and identifying coastline within 2 km of a mapped coral reef as "protected" by the reef, the study estimated that coral reefs

protect about 21 percent of the coastline of the Caribbean region (about 18,000 km in length) (Burke et al., 2004). See table2 on page 63.

The economic value of the shoreline protection services provided along these coastlines varies with the level of development of the shoreline, its population density, and tourist activity. The study showed that the annual coastal protection benefits ranged from US$2,000 per km of coastline for protection of less developed shorelines to US$1,000,000 per km of coastline for highly developed shorelines. Accounting for the length of shoreline in various categories of development, Burk's study (2004), estimated the value of "annual benefits from the shoreline protection services of healthy coral reefs across the Caribbean region" to be between US$740 million and US$2.2 billion per year (Burke et al., 2004) (table 3).

Table 3: Valuing Changes in the Quality of Coral Reef Ecosystems

Valuing Changes in the Quality of Coral Reef Ecosystems Selected studies valuing access and quality change for diving at coral reef sites			
Author(s)	**Resource**	**Year of Study**	**Value per diver in 'year of study dollars'**
Dixon et al. (1993)	Bonaire Marine Park	1991	$27.40 mean annual WTP for access to scuba dive
Tongson and Dygico (2004)	Philippines Marine Park	1999	$41.11 mean WTP per live-a-board boat trip (avg. 3 dive days) for access to scuba dive
Spash (2000)	Jamaica Marine Park	Not reported	$25.89 mean annual donation for five years to trust fund to operate marine park to improve environmental quality from 60% to 100% of its potential
Spash (2000)	Hypothetical Curacao Marine Park	Not reported	$25.21 mean annual donation for 5 years to trust fund to operate marine park to improve environmental quality from 35% to 75% of its potential
Lindsey and Holmes (2002)	Proposed Vietnam Marine Park	1999	$.51-1.48 mean WTP for daily access for any activity
Mathieu et al. (2003)	Six Seychelles Marine Parks	1998	$5.20-14.40 mean WTP for daily access for any activity (range is for different areas). $19.80 mean WTP for daily access to scuba dive.
Arin and Kramer (2002)	Hypothetical Philippines	1997	$3.40-5.50 mean WTP per dive for moderate improvement is in quality (many scenarios were considered)
Wielgus et al. (2003)	Eilat Coral Beach Nature Reserve in Israel	2001-2	$1-3 mean WTP per dive for moderate improvement in quality (many scenarios were considered)

Source: Burke et al., 2004

The Reefs at Risk in Caribbean study created a Threat Index as a proxy for future coral reef condition and associated declines in the coastal protection function of reefs. The study estimated that over eighty percent of the shoreline areas now protected by coral reefs will experience some future reduction in protection service. This reduction might not be apparent as quickly as declines in fisheries or recreation because reefs

must become severely degraded and eroded before loss of protection occurs. However, within the next 50 years, the net value of lost benefits from reef-associated shoreline protection could be on around US$140 million to US$420 million per year (Burke et al., 2004). Coral reefs protect shorelines by dissipating wave energy and are an important source of white sand for many beaches.

The Role of Participation in Managing Protected Areas

Stakeholder participation in MPA planning and management is one governing arrangement that can contribute to MPA performance. Participation of experts, community members and government officials takes on a vital role in rural development and conservation. Participation among different community members ensures that projects and programs meet local community members' needs, and informs them of plans, ongoing activities, and results. It allows them to feel like they are a part of the process and enables them to express their opinions and concerns as they participate in the decision-making procedures. More specifically, resource users, scientists, conservationists, government and non-government organizations and the general public, are increasingly being invited to discuss, debate, and even develop rules about how people should interact with marine ecosystems. There is general agreement among researchers and practitioners that involving stakeholders in planning and management efforts can lead to decisions that are better supported, rules that are more likely to be followed, and outcomes that meet management goals (Halvorsen, 2006).

Many methods have been developed to include stakeholders in decision making. Traditional methods include public meetings which are organized social gatherings allowing all interested individual to attend and focus groups which are small discussion

groups selected to identify issues and concerns (McComas & Besley, 2006). More deliberative methods that are not used as frequently include citizen juries where a small group of members of the public are selected to meet, deliberate, consult with experts, and make recommendations to decision marketers, or community dinners where members of the public sit in small groups and have facilitated discussions about a focused policy (Halvorsen, 2003).

Often times, different methods are used together in environmental planning. Studies of terrestrial environmental management efforts indicate that the quality of the process is as important for achieving management goals as getting individuals to take part in planning and management activities. Five elements of the process have the most influence on quality. The first is opportunity for input which provides citizens, even those with little or no technical expertise, the chance to provide their views in the planning process. The second is influence over decisions which means that participants' input can affect the structure of the process and the final decision. The third element is adequate information exchange, which ensures that all participants can obtain and easily understand relevant information sources. The fourth is transparent decision making, which ensures that participants clearly see how a decision is reached. Finally, fair decisions, which are considered appropriate and valid and result from a legitimate process (McComas & Besley, 2006).

Planning processes that incorporate the above mentioned elements are expected to result in better outcomes and by understanding the social and ecological outcomes associated with MPAs, and the factors influencing these outcomes, has been

a topic of growing interest among MPA researchers and practitioners in recent years (Burke et al., 2004). Studies of the social impacts of MPAs indicate that they can affect income, employment and food security, community empowerment, level of conflict within local communities, spatial and temporal patterns of use, the distribution of resources within communities, and human health and property rights (Margules & Pressey, 2000). Research of ecological performance suggests that MPAs can impact fish abundance, fish biomass, diversity, spillover of adult fish from within MPA boundaries, export of larvae from within MPA boundaries, coral cover, ecological community structure, and the incidence of coral disease.

Despite the increasing attention on MPA performance in the literature and the recognition that stakeholder participation in MPA planning and management is important, few studies examine relationships between process quality and MPA performance. In fact there is limited research in marine and terrestrial environments that links participation and environmental management outcomes (Halvorsen, 2003).

There is strong pressure to expand the network of marine protected areas to enhance reef protection. Efforts to do this conservation are mainly funded through the tourism industry. Currently, this funding comes from entrance fees for parks, government revenues (taxes, rates, license fees), improved management and planning, environmental awareness training, protection and preservation, and alternative employment (Harriott, 2002).

Roatan Marine Park Challenges

A marine park is only as good as its management. In addition to requiring effective management, it is also important for marine parks to address the challenges of their specific geographic and surrounding area. Roatan Marine Park (RMP) has no shortage of challenges. The primary ones will be discussed below.

One of the principal issues that prompted the local dive community to create a marine park authority in the first place was the lack of enforcement of local fishing laws. At first, the majority of financial resources were focused toward addressing this issue. Roatan Marine Park now runs a successful patrol program under an alliance with the Honduran National Police. However, a single management approach is not the most effective way to address this problem, and it needs to be supported by continuing education programs for local communities. Additionally, it is important to consider and facilitate adoption of alternative livelihoods for these people. RMP is taking steps to achieve this through public-private partnerships. Aside from assisting in government initiatives such as increasing tourism facilities and access to deprived areas e.g. Punta Gorda, they work with private organizations to implement projects such as beekeeping and iguana farming. They plan to investigate the potential for aquaculture for commercial species such as conch in the future.

Another challenge of the marine park is the rapid increase in the tourism industry. There currently is an unprecedented number of tourists coming to Roatan, owing largely to the development of a cruise ship industry. While this is viewed as critical to the economic growth of Roatan, relatively little money generated trickles down to the local level. This is reflected in the insufficient infrastructure serving the

island. In addtitino, there are many crucial public services struggling to cope with the extra load incurred by having more than one million tourists coming each year. While this money should be going towards improving infrastructure, the only changes locals are seeing are higher transport and food prices, more frequent power outages, spiraling cultural erosion, and escalating terrestrial and marine environmental degradation (BICA [Bay Islands Conservation Association], 2009).

Along with increased tourism, unregulated large-scale development has posed a challenge to the marine park as well. Removal of hillsides and mangroves adjacent to the ocean poses serious environmental concerns about the health of coastal marine ecosystems. This problem is worsened by the perception developers have that the value of the reef that is lost as a result of such activities, is more than offset by the economic revenue that the development will bring. In reality, economic benefits go to a wealthy minority and the local population is excluded from the area. The local environment is less able to provide the ecosystem goods and services that foster sustainable livelihoods. Furthermore, while the economic gain from such activities may be considerably more in the short-term than other less destructive uses of the coastal zone, the long-term value of this resource is lost forever. Dredging is being carried out without permits or environmental consultation in order to make way for large development projects such as cruise ship docks. Dredging directly destroys already threatened habitats and releases sediment plumes that contain harmful concentrated anoxic chemical that threaten adjacent habitats and soak up all oxygen in surrounding waters.

Garbage, sewage discharges and sediment runoff, as well as the trade in endangered species, all provide obstacles for RPM. An unfortunate side effect of the cruise ship industry is the increased trade in endangered species and the practice of capturing endangered species to exhibit for money. While local cultures have traditionally used items such as conch and turtles for their shells and meat, the new, superimposed demand for these items as tourist trinkets has brought this industry to an unsustainable level. Legislation within the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) rubric protects the Hawksbill turtle from all commercial uses. However, other critically endangered and ecologically important species remain threatened due to loopholes in the law (Bräutigam & Eckert, 2006). While it is illegal to take conch from the ocean, it is not illegal to sell or buy its shell. Furthermore, foreign nationals may, by law, take up to three marine curios out of the country. With each cruise ship carrying between 800-3,000 people, this translates to huge quantities of these animals being illegally harvested for use in the marine curio trade, with up to 1,000 conch shells alone leaving on every ship. The Marine Park is currently communicating with cruise ship operators and working with the Municipal Police on the confiscation of items. It is illegal to bring CITES protected species and associated products into many countries, including the United States, all countries in the European Union, and Canada (Bräutigam & Eckert, 2006).

The destruction of wetlands results in the loss of habitat and biodiversity, loss of proper drainage and inevitable sedimentation of the reef. In Roatan, this has been particularly concerning in West Bay and Flowers Bay. The cutting of roads on hilltops

and hillsides, particularly when done during the wrong time of the year (wet seasons), and without permits, also leads to habitat loss, both terrestrial and marine, as well as uncontrolled erosion. This activity is especially harmful to Roatan's marine ecosystems due to the high red clay content in Roatan's soils. Mangrove destruction also gets in the way of RMP's functions. Cutting of mangroves is prohibited throughout the Bay Islands. Mangroves are federal property, and permits can no longer be issued that allow their destruction. Mangroves act as nurseries for many fishes, crustaceans and birds, filter out garbage, protect coastlines from erosion and hurricanes, purify water and deliver massive amounts of nutrients to the marine environment. Unfortunately, entrenched corruption makes it difficult to protect such habitats, and, more than once when visiting mangrove cut sites, RMP finds that those responsible for creating and enforcing environmental laws are the very people doing the cutting. Further weaknesses in the law mean that the fine issued for cutting mangroves is typically far less than the anticipated revenue from developing a property into condos or a hotel, and therefore these fines are simply built into expense budgets.

Roatan Marine Park Successes

Even with a limited workforce, only one full-time staff member working in the office, the RMP attempts to do as much as possible. With money generated from divers paying the voluntary User Fee, the purchase of merchandise, and grants awarded by PADI Project AWARE, the RMP has been able to develop marine infrastructure on Roatan's southern shores. Project AWARE has financed two infrastructure projects. The first project resulted in the installation of 16 channel markers at primary channels between Brick Bay and Oak Ridge, and provided 10 yacht moorings for visiting vessels in

French Cay. The second project was successful in installing 10 fishing moorings throughout the Cordelia Banks to reduce anchor damage and to assist in the establishment of a Fisherman's Association for the region. With 30 moorings to maintain, the inspection and replacement of the dive moorings keeps RMP staff busy.

Recognizing that long-term resource sustainability can only be achieved through improved education and community participation, the RMP has developed an education program targeted at Roatan's new generation. This Education Program has so far incorporated twelve schools and three education facilities from twelve communities around the island: West End, Sandy Bay, La Colonia, Mud Hole, Corozal, Gravel Bay, Coxen Hole, Los Fuertes, French Harbor, Punta Gorda, Jonesville and Camp Bay (Roatan Marine Park, 2013). The Program is interactive and aims not only to bring marine education to the classroom, but to bring the classroom to the reef. More than four thousand children in Roatan have been provided with environmental education since the program started. The importance of environmental awareness, including: recycling, clean water, mangrove protection, and ecosystem vitality are some of the main topics students get from presentations, field trips, classroom teachings, and volunteer outings.

Through the support of the Coral Reef Alliance (CORAL) with the purpose of supporting and broadening the RMP outreach and education program, several key people have been identified and trained to become RMP leaders. This project is enabling the RMP to access all communities in order to provide information about conservation, sustainable tourism and good environmental marine recreational practices. The trained leaders carry out education and outreach programs to target

different stakeholders and community groups throughout the Marine Reserve and involve them in conservation efforts.

In an effort to reduce the destructive impact of the invasive lionfish from the Pacific, on the coral reef ecosystem, RMP has employed a proactive stance, directly engaging the community in controlling the proliferation of this species. The RMP Invasive Lionfish Control Program focuses on the dissemination of information through educational workshops that cover topics such as lionfish ecology, potential impacts of lionfish infestations both environmentally and economically, first-aid treatment, and goals of the program immediate and future.

To increase the success of lionfish collecting, the RMP requested and received permission from the governing agency for fisheries in Honduras (DIGIPESCA) to distribute spears within the community to be used exclusively on lionfish to aid in controlling the population (Roatan Marine Park, 2013). DIGIPESCA delegated authority to the marine park to develop the program and to regulate as well as enforce the agreed upon rules of the program as discussed between the two agencies. Together, with the help of participants in this program, the RMP is hopeful it can manageably control the population of lionfish within the marine reserve and thus reduce their destructive impacts on Roatan's reef habitat.

The Recycling and River Clean – Up programs began in September 2009 through the RPM. These programs include daily beach clean-ups and the establishment of recycling bins. These programs have created alternative jobs for people and facilitated the reduction of trash on the beaches of the southern shores. In addition, supporters of

the RMP have participated in beach and under water cleanups in co-ordination with organized national cleanup programs. RMP's primary goal has been to have boats accompanied by the National Police patrolling the waters within the Sandy Bay West End Marine Park Patrols (SBWEMR). The police are provided with an introduction to reef ecology & conservation, threats and environmental laws. The RMP currently employs 3 full-time Park Rangers who conduct both land and water patrols throughout the day and night. The rangers are not only there to prevent illegal fishing but to act as watchdogs in the identification of new developments and mangrove cuts and to ensure that marine recreational users are operating according to safety regulations.

An important commercial activity in the Caribbean involving millions of visitors each year, tourism requires careful management by the Marine Parks. Thus management is a combination of zoning plans, plans of management of intensively used sites, codes-of-practice, and permits. A new approach being considered is based on a reef-wide strategic framework that promotes mandatory performance standards rather than proscriptive permits. Education and training remains an important component of tourism management.

Further research is needed to improve the quantification of economic value of coral reefs to improve dive tourism and shoreline protection as well as to provide more detail on a country-by country basis. Better information is needed on shoreline erosion in areas where coral reefs have degraded and on investments in shoreline stabilization. Given the rate and scale at which ECEs are disappearing worldwide, assessing and valuing the ecological services of these systems is critically important in improving

management and for designing better policies. Certainly, the various economic values of ECEs should be incorporated into planning policy decisions that are currently determining the major human drivers of ecological change, such as ecosystem conversion and degradation, resource overexploitation, pollution, and water diversion.

Coasts and small islands such as Roatan may comprise just 4% of the Earth's total land area, but as this research has shown, the ECEs that dominate these geographic areas provide some of the most important global benefits for humankind. Planners must consider the connectivity that takes place between terrestrial and marine ecosystems. Coastal planners especially should consider a seascape/landscape combination when analyzing a region both for ecological and urban purposes.

CHAPTER

4. RESEARCH PROCEDURES

Methodology

Qualitative research serves as a bridge, linking theory and practice to understanding and deeper findings. This study used a multi-method research approach. This enabled a diversity of data to be collected within a relatively short period of time. The approach was qualitative as well as quantitative in nature and included on-site field observation, surveys, key informant interviews, and semi-structured interviews.

The data collection focused on certified scuba divers. Surveys were designed to get a better understanding of dive customers and were given to customers of a local dive shop in Battle Creek, MI: Sub Aquatic Sports and Services. This survey was e-mailed to customers on the dive shop's mailing list, posted on their website and Facebook page, and hard copies were available to walk-in customers. The aim of this was to obtain data on the hierarchy of location choices of divers in the Caribbean: where they go overall in the Caribbean to dive, and where are the first few places where they chose to go. This survey was completed using a Google Drive Form and can be viewed in hard copy in Appendix A and via the link provided.

A second survey was made available to dive customers at Anthony's Key Resort, at the concierge desk, and on-line. At Anthony's Key Resort between June and September of 2013, subjects were given a link to a website where the survey was located. This survey was also created on Google Drive and the link to this survey can be found in appendix A. The aim of this survey was to collect data on the hierarchy of

where divers go in the Caribbean, and why they choose to go there, but in addition, this survey elicited information on the divers' experiences in Roatan and more specifically at Anthony's Key Resort.

Resort Survey Design

The survey consisted of 45 questions including a mix of closed-ended and open-ended questions as well as rating scale responses where several measures of satisfaction were recorded. Respondents were asked to rate various attributes of their dive and resort experience on a scale of 1 to 5, where 1 indicated that they strongly disagreed with the statement and 5 indicated that they strongly agreed with the statement. The other types of likert-scale questions elicited guests level of satisfaction where 1 was extremely dissatisfied and 5 was extremely satisfied.

Information collected in the surveys included the divers' Caribbean scuba diving history, certification levels, socio-demographic characteristics, aspects of resort and diving experience satisfaction levels, and environmental attributes of the reefs. The survey was pretested on certified divers to ensure that completion time would not exceed 20 minutes and to verify that the wording of the questions was appropriate. The survey was sent in to, analyzed, and approved by the Human Subject Institutional Review Board (HSIRB).

The use of semi-structured interviews assisted in minimizing the conception of the unbalanced relationships between interviewees and the interviewer by sharing experiences and giving personal details to the interviewers. The limitations of semi-structured interviews are that they are time-consuming, require interviewing skills and

are prone to bias generated by the interviewer's comments, tones or non-verbal behavior.

Semi-structured interviews have specified questions but allow more freedom than structured interviews to seek clarification and explanation. In other words, semi-structured interviews combine the flexibility of the unstructured interviews with comparability of key questions. Additionally, semi-structured interviews allow the researcher to have a checklist of questions on a specific topic to be covered that acts as an interview guide. This method is appropriate for getting in-depth responses from key respondents including detailed information, facts, and opinions. The advantages of this method are the freedom for the interviewees to express their opinion in detail and to talk from their own frames of reference with comfort. Furthermore, it provides a rich set of data while establishing trust and personal contact between interviewer and interviewee that may lead the discussion into significant areas (Jennings, 2001).

Time and financial constraints prohibited a lengthier sampling period, and difficulties in asking visitors to complete an interview while on vacation limited the total sample size of the interviews. Divers were interviewed at the boat docks while they were between dives. Interviews of divers focused on the participants' perceptions and attitudes towards dive tourism in the Caribbean as well as more specifically in Roatan at Anthony's Key Resort. The aim was to develop an analytical description of the guests' views of the dive resort and to investigate a broader perspective of where they choose to go diving in the Caribbean. Semi-structured interviews were suited to this study because I identified a topic that worked within a research agenda.

There was no criterion established to determine the interviewees. Among those chosen were photographers or non-photographers, first day divers or divers on their second day or more of diving, men or women, cruise ship visitors or visitors staying in hotels on the island, and visitors diving from the shore or diving from the boat. Each was asked about their dive experience(s) on the Island of Roatan. They were asked to compare this experience to other Caribbean dive experiences. The questions were constructed to elicit diver perceptions of both diving experiences in the Caribbean compared to Roatan, and compared to other dive resort experiences. These contained more open possibilities to the questions to elicit more critical thinking/personalized responses. Cruise ship passengers that visited Anthony's Key for a dive experience were also interviewed to get an idea if cruise ship stops to resorts resulted in customers deciding to stay there when they visited that country. The questionnaire included a mix of closed-ended and open-ended questions done in English and Spanish to provide a larger market analysis due to being a Spanish speaking culture.

In addition to interviews with divers, key informant interviews were used onsite in Roatan, to explore the subject of diving with people with specialized expertise. This provided insight from a range of people who had firsthand knowledge. These interviews were done onsite with resort staff personnel as well as customers of the resort. Several face-to-face interviews took place in the local Battle Creek dive shop SASS. The aim of these interviews was to determine historical dive tourism trends. The purpose was to find out what places get booked most often and what type of diver is booking specific places. Information was collected through Skype, phone and face to face Interviews.

Interviews were done with the resort's marketing director via computer, with a goal of determining common trends of divers that come to Roatan, Honduras.

Subject Recruitment

The number of subjects recruited for the resort survey was 150. Participants were 18 years or older. They must have logged at least one dive in Roatan, Honduras to participate in the study. Participants were recruited via the Resort's website with a chance to win $100 for participating. The link to the survey was also available on the resort's Facebook page. The front desk employees verbally let customers know about the survey on their last day at the resort while waiting in the lobby for the shuttle to the airport.

When subjects agreed to participate in the resort survey, they were informed that they do not need use their names so that they would remain anonymous. Instead, they were instructed to show that they agreed by clicking a box saying "yes, I agree". However, at the end of the survey they had the option of supplying their e-mail address (but NOT their name) if they wanted to be included in a drawing for a chance to win $100. Surveys in the study required about 15 – 20 minutes to complete. These surveys were collected between June and September of 2013.

Subjects were interviewed at the resort during the fieldwork duration of the research. They were recruited from a dive shop that is a part of the resort. This insured that the subjects were divers staying at the resort. The recruitment process involved the interviewer (thesis author) asking subjects if they would like to be part of a research study on dive tourism. If they agree, they were handed the informed consent document

which they read and signed. The target number of interviews was 3. This took place in the summer of 2013 when the investigator was on-site in Roatan.

Instrumentation

Secondary data, available from online sources, was used to develop a thorough investigation into dive tourism in the Caribbean. This data was used to supplement the surveys, field observations, and interviews. Links to the dive surveys are included in Appendix A. On site, a digital camera and short video recordings were used to capture single-view and panoramic views of the resort and surrounding areas that are associated with dive tourism (dive shops, dive locations, etc.)

CHAPTER

5. PRESENTATION AND ANALYSIS OF DATA

Resort Surveys

A total of 98 valid resort surveys were collected over a four month period of time. In order to determine why divers might choose a particular location, the survey included questions that focus on the characteristics of the dive tourism market in Roatan. Socio-demographic and diver experience variables were used to provide a descriptive profile of divers.

Forty three percent of the survey respondents were between the ages of 45 and 54 with ages 35 – 44 (23%) and 55-64 (20%) as the next most popular dive age. Thirty four percent of those surveyed began diving between the ages of 18 and 24, 27% between the ages of 35-44 and 22% began between the ages 25-34.

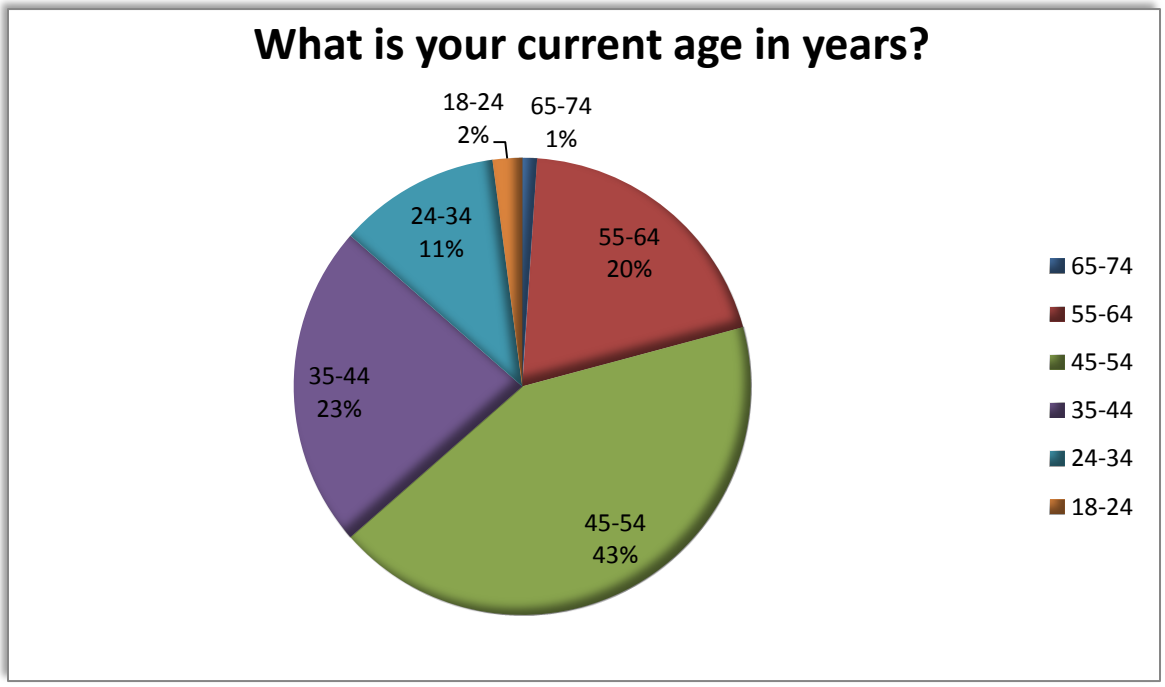


Figure 10: Current age of divers at the resort

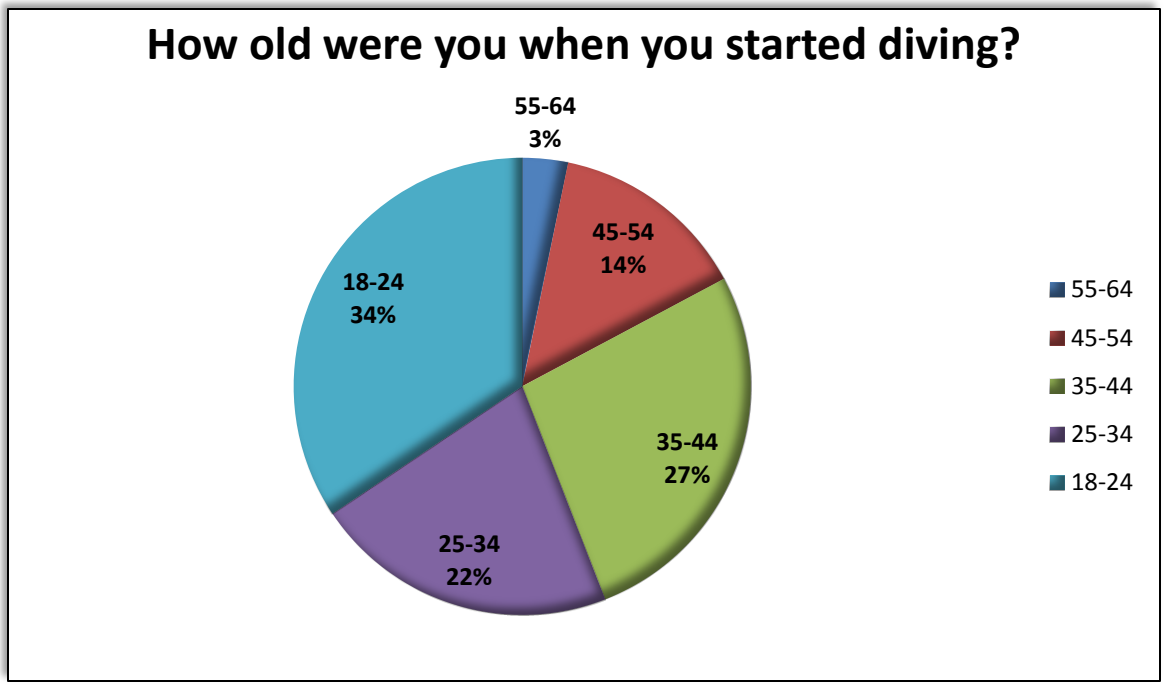
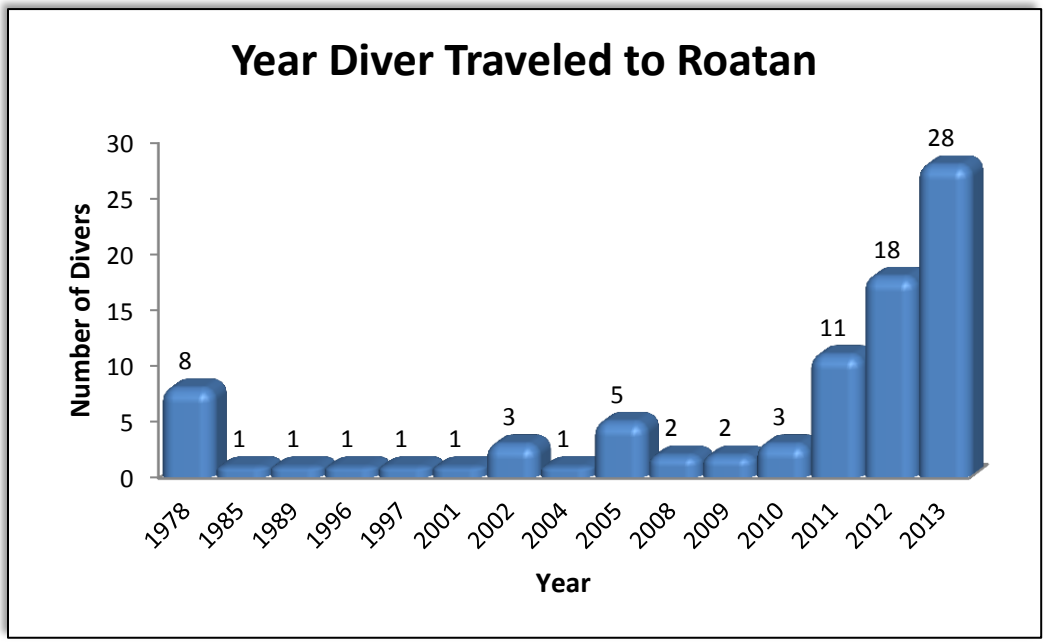


Figure 11: Age When First Began Diving

Respondents traveled to Roatan between the years of 1978 and 2013. The majority of the respondents visited Roatan in the last three years (2011 – 2013).

Table 4: T Chart - Year Diver Traveled to Roatan



The number of dives respondents have logged ranged from 1 (first trip ever) to over 150 dives. Forty one percent of all respondents have logged more than 150 dives.

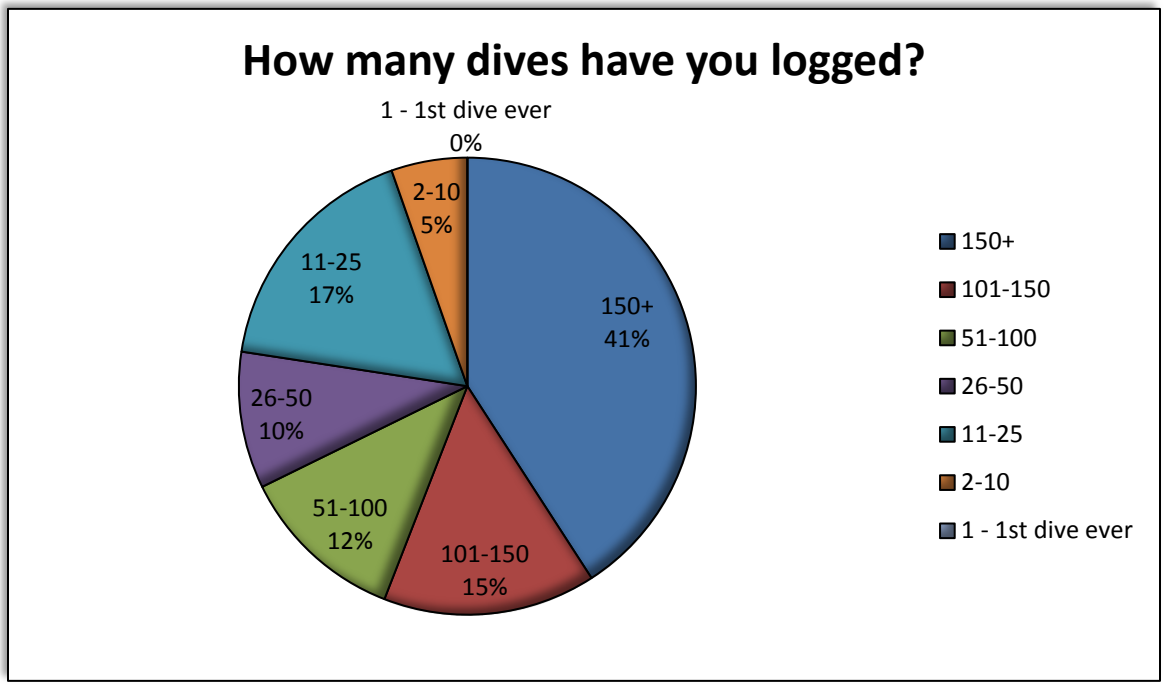


Figure 12: Number of Dives Logged

The top three dive certification agencies are NAUI, PADI, and SSI. Over one half of the divers surveyed were certified by PADI (65%) with Advanced Open Water Diver and Open Water Diver being the most popular highest levels of certification. See figure 13 on page 94. An advanced Open Water Diver certification allows you to dive to deeper depths than a basic Open Water Diver certification. It also allows you to night dive. The majority of these divers received their certification at a local dive shop (72%) while only 13% got their certification at a dive resort in another country. See figure 14 on page 94.

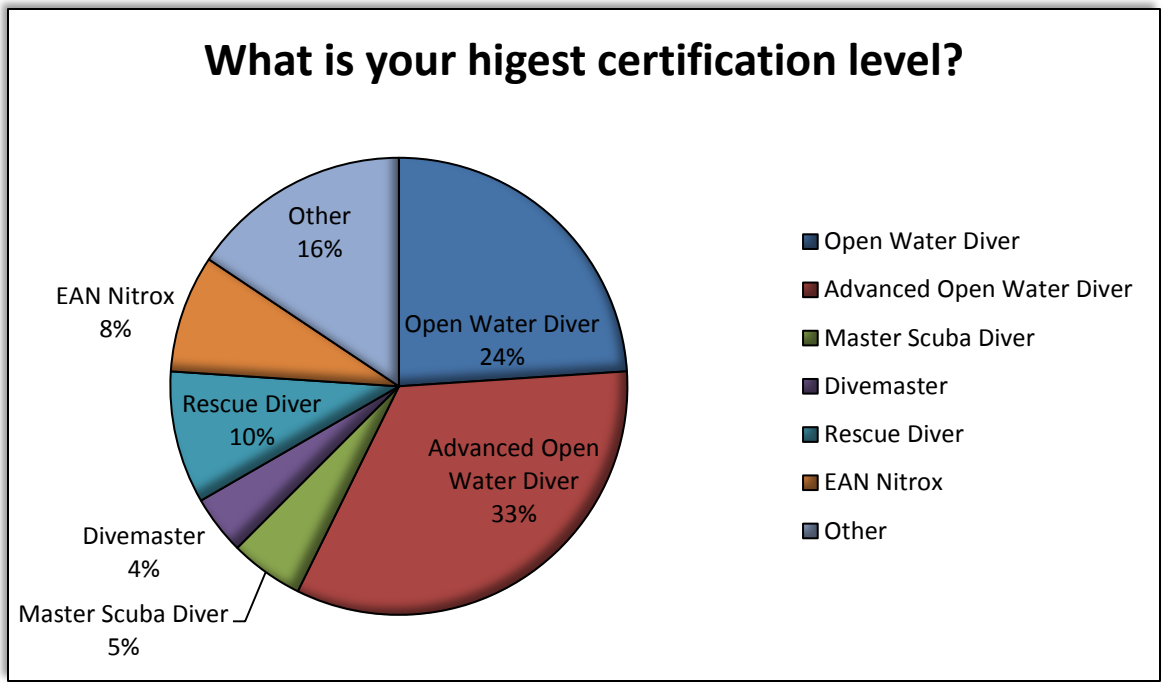
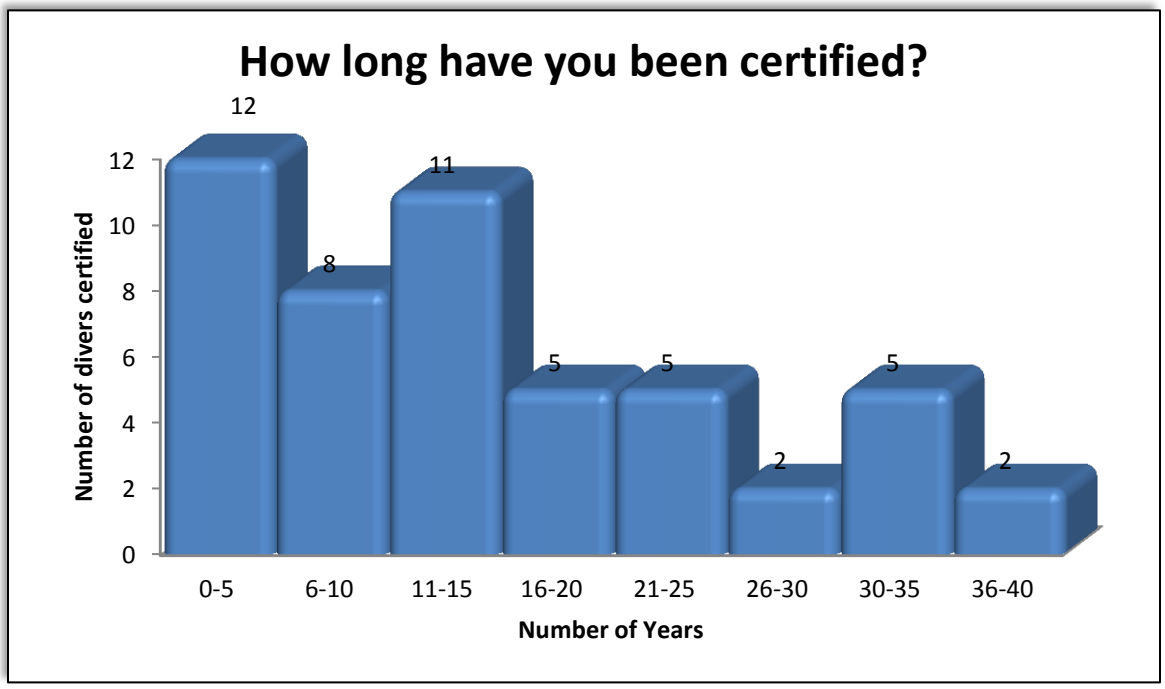


Figure 13: Diver Certification Level

Figure 14: Location of Dive Training/Certification

Divers who took the survey have been certified for a range of 1 – 39 years, with the majority of them having been certified for five – 15 years. See Table 5 below.

Table 5: T Chart - Years Certified as a Diver



Objective #1: Where do people go to dive in the Caribbean?

The primary aim of this study was to investigate where divers go in the Caribbean. Questions were geared toward finding out not only where they go to dive in the Caribbean, but in what order, specifically, which destination do they choose to go to first to see if a hierarchy exists. In addition to investigating this hierarchy, information was gathered on the top Caribbean destinations that respondents would like to go to for diving, as well as unpleasant experiences they had with Caribbean dive locations.

The most visited Caribbean destination that guests have been to according to the survey is Roatan. However, since this was a criterion for participants in the study, all

of them have been to Roatan. Therefore this question was used mainly to get an idea of where else divers go in the Caribbean. According to the results, the top places people go to in the Caribbean in order are Cozumel (61 of 90 respondents), The Bahamas (56 of 90 respondents), Florida (48 of 90 respondents), and Belize (46 of 90 respondents) (figure 15). This corresponds with most spatial tourism theories as all three of these locations are some of the closest Caribbean dive destinations to the U.S. Although not all Caribbean divers are from the U.S., the majority are. The flight patterns to these three destinations are among the cheapest, have the most flights, offer direct flights and fly out of a variety of hubs. This corresponds to the spatial/financial element of the developed model as the first element of the decision making process.

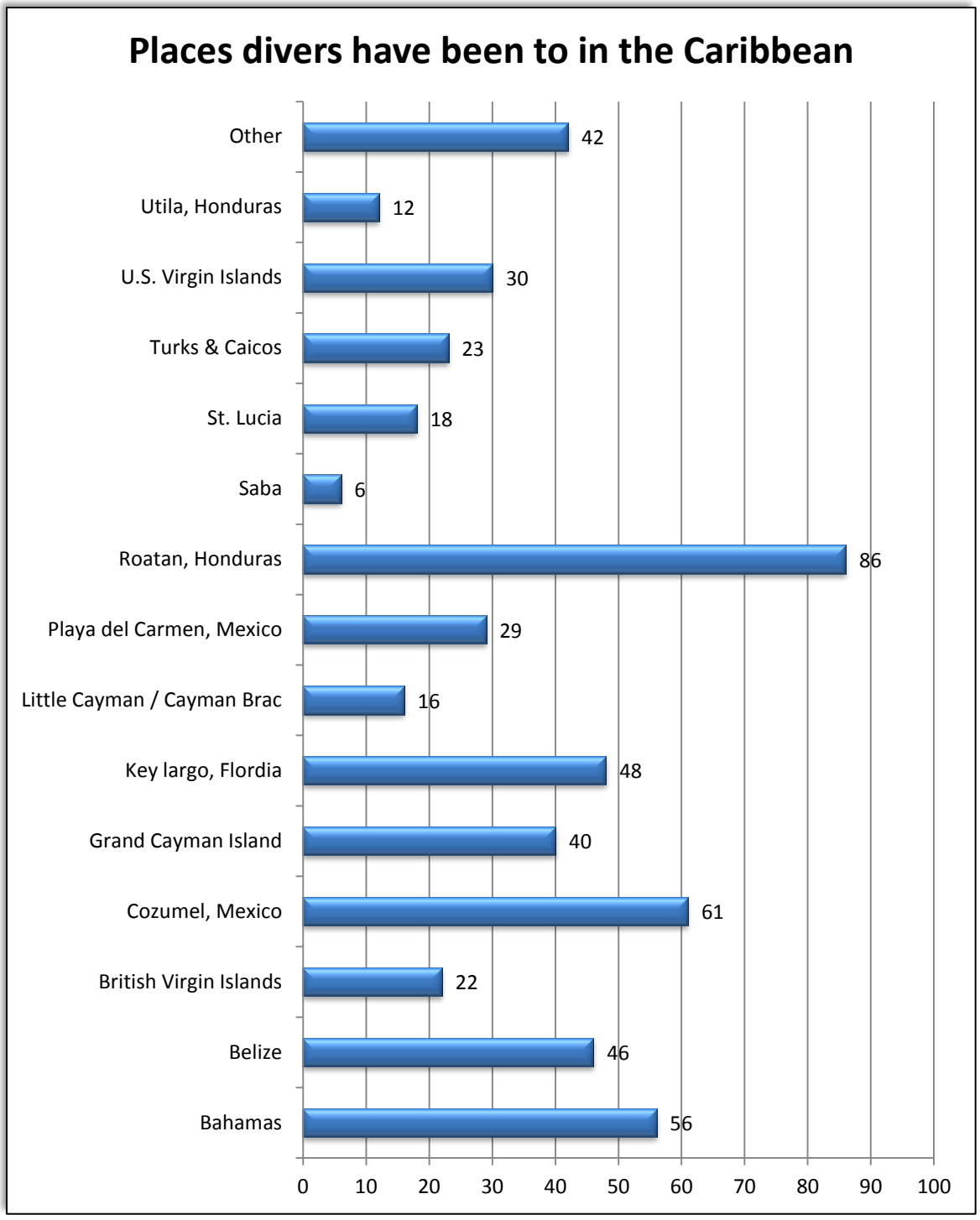


Figure 15: Where Divers Go in the Caribbean

Of the destinations you checked above, which 3 did you go to first?

Survey results show that most common first dive in the Caribbean for respondents occurred in Cozumel, Mexico, The Bahamas and the Cayman Islands. See Table 6 below.

Table 6: Location of First Dive in the Caribbean

Location of 1st Dive	# of times cited
ROATAN	20
COZUMEL, MEXICO	10
THE BAHAMAS	6
US VIRGIN ISLANDS	6
TURKS AND CAICOS	4
BONAIRE	3
THE CAYMAN ISLANDS	3
JAMAICA	3
BELIZE	2
PUERTO RICO	2
THE DOMINICAN REPUBLIC	2
FLORIDA	1
CURACAO	1
CUBA	1
ARUBA	1
BRITISH VIRGIN ISLANDS	1

Located 10 miles off Mexico's Yucatán Peninsula, the island of Cozumel is known for its characteristically Caribbean warm crystal clear water. Cozumel boasts spectacular walls and coral formations, colorful sponges and an incredibly diverse marine life and is consistently rated as one of the world's top scuba diving destinations. The Marine Park of Cozumel, created in 1996, has 26 types of corals with more than 100 subspecies. Living in the park are also approximately 500 fish species, including the

endemic splendid toadfish (PADI.com (A), 2013). Due to marine life protection programs, divers can also often see loggerhead, hawksbill and green turtles.

Cozumel has a variety of different types of dive sites ranging from shallow dives featuring abundant coral and tropical fish life for beginners, to challenging drift, wall dives for the advanced. For the most part, it's all live boat diving - boats drift along behind divers and don't anchor at all.

Figure 16: Toadfish: Endemic Species in Mexico

Source:http://reefguide.org/carib/pixhtml/splendidtoad4.html

The Cayman Islands are known for amazing wall dives, beautiful coral reefs and visibility that often reach more than 100 feet (PADI.com (A), 2013). They include Little Cayman, Cayman Brac and Grand Cayman which is the most visited by scuba divers. They are revered for Grand Cayman's North Wall which plunges deeper than 6,000 feet with beautiful wall diving that provides opportunities to see spotted eagle rays and sea turtles (PADI.com (A), 2013). Divers can also find the famous Stingray City here and divers enjoy the accessible shore diving. There are buoyed markers divers can swim to

reach the coral reef wall with little to no current making beach dives unique opportunities. Shipwrecks are also available off the shores of Cayman Brac as well.

With a dramatic growth in tourism and an increase in cruise ship arrivals, the islands have enacted comprehensive legislation to protect the fragile marine environment. The Cayman Islands' Marine Parks were founded in 1986, in an effort to protect these resources with the slogan "Save Our Tomorrow – Today". Vessels that cause damage with anchors or chains anywhere in the Cayman waters are given a ticket.

The Bahamas are an archipelago of 700 islands covering 100,000 square miles in the Western Atlantic Ocean with abundant healthy coral reefs (PADI.com (A), 2013). A variety of dive adventures are possible such as vertical walls, wrecks, tunnels, caverns and blue holes. The water is very clear with 100 –foot visibility and lots of marine life. With a subtropical climate, dive conditions are ideal year-round with an average water temperature of 80 degrees and sunny 340 days a year. The main language spoken is English (PADI.com (A), 2013).

Grand Bahamas Island first became a popular dive site after the filming of Sea Hunt occurred there over 50 years ago. This Bahamas Island offers shallow reefs as well as deep caves (Ben's Cave which opens to a six-mile freshwater cave system once explored by Jacques Cousteau), sunken ships (favorites are: Theo's Wreck, a fully-intact 268-foot cement freighter at 100 feet on the continental shelf and Sea Star, a 180-foot fishing vessel lying at 90 feet), and a healthy population of dolphins and sharks (PADI.com (A), 2013). About a mile and a half off the east coast of Andros Island – a popular island in the Bahamas – is the Andros Barrier Reef which is the world's third-

largest barrier reef at 190 miles long and more than 160 species of coral and fish. Dive experiences here include shallow water, wreck and blue-hole dives as well as wall dives off the 6,000-feet-deep Tongue of the Ocean which attracts many diving enthusiasts and requires good buoyancy (PADI.com (A), 2013).

For the past ten years, the Nature Conservancy has been working with the government in the Bahamas to protect its natural resources for future generations. They have recently launched an ambitious project to gain political support and foster long-term financing for protected areas across the Caribbean. This was termed: the Caribbean Challenge and became a regional an effort to protect 20 percent of the Caribbean's marine and coastal habitat by 2020 (Waitt Foundation, 2013). The aim of the Caribbean Challenge is to transform the region's national park system and triple the amount of protected marine and coastal habitat, including nearly 21 million acres of coral reefs, mangroves, seagrass beds and other important habitat. Since the launch of the project, marine protected area coverage across the Insular Caribbean has increased from 7 to nearly 10 percent (Waitt Foundation, 2013).

What Caribbean dive destination have you returned to most often, or would like to return to and why?

According to the survey data, The Caribbean diving location that customers have returned to most often are: Bonaire, Cozumel and Roatan. The most popular reasons divers cited for returning to those three places was the ease of diving followed by inexpensive price, variety of dive sites, variety of sea life, exemplary dive operations and friendliness of resort staff (See table 7). As Cozumel diving was briefly described above

and Roatan's diving has been described in detail in previous chapters, a brief description of Bonaire will be given next.

Table 7: Dive Destinations Most Returned to

What Caribbean dive destination have you returned to most often, or would like to return to and why?	
Place	**Reason**
Bonaire	• Easy diving • The shore diving and shore diving support is second to none • There are a lot of dive sites and many accessible from shore • So many varieties of fish • Great opportunity for shore diving and all levels of experience • Was where we honeymooned
Cozumel	• Easy diving, great environment, inexpensive • Price • Very affordable & not too far, best diving I have done, been there 3 times & will be there again this August for 7 days , great dive spots & love the seclusion of the island. • Great variety of dives, friendly locals, many dive facilities, good prices and accommodations. • Reef structure
Dominica	• Varied activities
Grand Cayman	• Very good and safe dive operators and easy diving • Diversity of sea life
Grand Turk	• Very easy diving, everything is close by, and we like the familiarity with the place and the people
Nassau	• Easy to access by cruise ship
none	• Have not returned to any at this time. We like to see new locations. • Like to try new things
Roatan	• Marine life, corals, and sponges were amazing and abundant. • Love Anthony's Key Resort • Best overall dive experience from hotel to dive operation and diving. • I did the west end 2 times, just got back from diving on the east end. I found the east end to be amazing and am anxious to go back to the east end again very soon! I feel that this island has a ton to offer both divers and tourists. It is on our "short list" for retirement. • Great Vis & Color, lots of fish and light current. • We just love everything about it - great diving, good food, good service, etc. We're hooked on AKR • Just because Anthony´s Key is there • Friendly people. • My current favorite. I have migrated over the years to avoid the "condo" crowd. as a location becomes popular I tend to feel crowded by people who do not necessarily share the love of the reef and respect for the lifestyle. This increase in casual divers tends to lead to less enjoyable dives both because of the company and the stress on the reef. Roatan has so far managed to avoid this (partly because I stay on the north shore and away from the beach property that is so popular. • I would return because Anthony's Key Resort had it all! It felt like I lived on my own private island and had to take the water taxi to and from it. The meals were fantastic; the atmosphere was friendly and beautiful. Many options for divers including boat, night, beach, and drift dives! Secluded property and educated staff to make sure you're in good hands when diving. Not to mention their dive boat fleet was top notch

	• Snorkeling • (AKR) as it has great facilities for both divers and non-divers (my wife enjoyed AKR and now they have a Spa…) • Anthony's Key resort. It was a small magical place, underwater and above. It is where my husband asked me to marry him and 10 years later want to return to celebrate • I like the convenience and proximity of the dive sites to the dive resort. It's also a reasonable price for 3 tanks a day and some night diving • I really enjoy AKR. I love the live aboards as well as Anthony's key. Clear water great staff great treatment of the dolphins • Anthony's Keys price is right and they do A+ job • LOVED Anthony's Key and the dive staff • Anthony's Key is the dive resort we have returned to most often. We love it there because of the close proximity of the dive sites and the great hospitality and staff. • I would love to return to Anthony's because I love the "organic" and earthy feel of the resort. It's not all concrete and colors, it blends with the environment. Also everyone there is very friendly. Roatan-easy diving, professional staff Cozumel-drift diving, good visibility, professional staff. Roatan. Convenience, Variety of diving and vast choice of dive shops and local entertainment Caymans. safety, overall environment and economy. • I live there • They treat you like a king and the diving is great. I can never say enough good things about the staff and facilities at AKR • because of the great diving and cost in Roatan • We loved Anthony's Key Resort. • Warm, calm waters, dive locations are very close. • Had a very seamless dive operation catering to all levels. Restaurant and accommodations were better than expected. Dolphin snorkel experience was outstanding. My 14 year old son became Open Water certified while there and the staff of instructors were fantastic
Saba	• Small boats with tight operations focusing on safety first. Reefs are in amazing shape due to protection from the local authorities (permanent mooring lines, no commercial fishing, etc). Food and accommodation was incredible. Accommodation and diving is also very reasonable, and we were very impressed that we weren't' charged when we missed a night at the resort and a day of diving because of flight delays.
TCI	Own home there

Bonaire is located 70 miles off the northern coast of Venezuela in the Caribbean in the far-western section of the Dutch Antilles. Bonaire is the exposed top of a submerged mountain with world-class diving 200 yards from shore. You can access 53 of Bonaire's 86 dive sites without a boat. The reefs of Bonaire are among the healthiest in the Caribbean with high levels of live coral cover and fish stocks. The pristine nature of the system is due in part to the conservation and management efforts of the Bonaire National Marine Park (BNMP). In 1961, Bonaire passed legislation to protect turtles and

has been a leader in marine protection ever since. Spearfishing has been banned since 1971 and no anchoring on coral reefs is allowed (PADI.com (B), 2013). The Bonaire National Marine Park was established in 1979 with a mission to protect everything - dead or alive – from the high water mark to a depth of 200 feet while facilitating responsible use. The BNMP is currently operated by a non-profit, non-governmental organization. All users, including tourists, are required to purchase an annual nature tag to help support its protection mission for $25 US for divers and $10 US for all other uses (PADI.com (A), 2013). All divers who visit are also required to attend a briefing, followed by a "check-out" dive to demonstrate their buoyancy control before being allowed board a dive boat or dive from shore on their own. The BNMP periodically shuts down popular dive sites to rejuvenate the corals and moorings are removed and placed on different sites. This is another reason Bonaire's reefs are in such excellent condition. Over 470 fish species are found in Bonaire's waters (Wilkinson et al., 1999). Angel fish, parrot fish, groupers grunts and blue tangs are everywhere and frog fish, sea turtles and eagle rays are often seen as well. Bonaire's reefs have among the highest coral cover and greatest representation of ancient coral colonies of reefs anywhere in the Caribbean (Wilkinson et al., 1999).

What Caribbean dive destinations are on the top of your 'bucket list'?

The top three locations to dive on respondent's bucket lists in order from most mentioned are: Bonaire, Belize, and The Cayman Islands (see table 8). As Bonaire and the Cayman Islands were previously described, a brief description of diving in Belize will be next.

Table 8: Caribbean Bucket List Destinations

What Caribbean dive destinations are on the top of your bucket list?	
Place	**# of times represented**
Bay Islands - Utila	**3:** hoping to see whale sharks) hear great things about it
Belize	**15:** want to say "I dove the blue hole"; whale sharks; blue hole – heard great things; dove one day from cruise ship – was beautiful, want to add the blue hole to my bucket list; blue hole; blue hole; the ruins and the diving
Bonaire	**13:** shore diving, protected reefs, pristine diving walls; to see the difference between the eastern and western Caribbean; hear great things about the diving; liveaboards; recommendations from instructors; heard a lot of good diving down there.
Cayman Islands	**12:** wall dives; articles in DAN show that this is one great place to dive; heard great things about it; pristine diving and the walls.
Cozumel	**3:** drift diving
Cuba	**3:** PADI is not allowed there so more 'untouched' ;if travel is ever allowed freely I will be eager to explore
Saba	**2**
Turks and Caicos	**3:** more for the land based experience; heard great things about the dive sites
Virgin Islands (st. Croix) St. Lucia	**3:** have heard so much about the clear warm waters and the wild life, also interested in the wrecks around the island

Although Belize is the second smallest and least populated nation in Central America, tourists flock to this country for a variety of reasons. Divers obviously come for the prime oceanfront real estate along the second longest barrier reef in the world, but Belize is an ideal holiday location for nondiving families or significant others. Many visit Belize for rest and relaxation, beaches, rainforests, hiking, mountains, cave tubing, wildlife and touring Mayan ruins.

The Blue Hole is the most popular dive site and was mentioned as many of the respondents' reasons for Belize being on their bucket list. This spectacular hole-in-the-reef dive is a day-trip away from most of Belize's dive resorts. It includes reef and bull sharks and fascinating stalactite and stalagmite formations.

Blue Hole in Belize

Figure 17: The Blue Hole in Belize

Source: http://www.padi.com/scuba/scuba-diving-trips/scuba-diving-resort-vacations/belize2/

Where was your worst dive experience and why?

The top three reasons cited for diver's worst experiences were bad weather, poor water visibility, and rude/unprofessional dive operator staff. While weather is beyond the control of dive destinations, professionalism of dive operator staff is and should be addressed at each dive shop/resort. The dive staff can have an impact on

divers' experiences and satisfaction levels and overcrowded dive boats were also of concern as well. It is important for divers to act professional at all times and help divers to feel at ease and safe.

Objective #2: How do divers choose where to go?

The second objective of this study was to analyze how divers make decisions about which destinations they choose go to. Data taken from the survey was used to create a Diver Destination Decision model during this research, and analyzed for validity. This will be shown and discussed further in Chapter 6.

Objective #3: Where does Roatan fit into the hierarchy of where divers choose to go?

The third objective of this study was to see where Roatan fits into the larger picture of where people go to dive in the Caribbean. Roatan has experienced extraordinarily rapid growth in the last decade. It is extremely evident that although once a well kept secret to extreme divers and the islanders themselves, Roatan is becoming popular. Recommendation through word of mouth has been spreading news of this Caribbean destination quickly and effectively. Using Miossec's (1977) diffusion model discussed in chapter one, the island of Roatan currently stands within phases 3 and 4. Roatan's rise to the mainstream as a tourist destination has occurred only recently. As more people learned about this Caribbean Island and its features, tourism increased quickly. This then led to development throughout the island in specific areas as well as an increase in infrastructure. A variety of resorts have developed and areas of the island have become specialized in diving activities.

Much has been accomplished in the last five years to make it easier to get to and stay on the island. As mentioned before, increased flights as well as an addition and upgrade to the Roatan Airport, and new sewer system for the West End/ Flowers Bay region, the paving of roads (especially the main one) and more have modernized the island allowing for the support of increased tourism. A more direct route is important to tourist destinations as it takes less time and reduces the cost. Although flight costs have come down over the years, flights to Roatan can be quite high depending on when you go. They range from $550 US to $1,250 US and affect 49% of diver's choosing to go Roatan. You can easily fly to Roatan from most U.S. cities using American Airlines from Dallas/Fort Worth and Miami; United Airlines from Houston or Newark; Continental Airlines from Houston or Newark; Delta Airlines from Atlanta; and TACA Airlines from Houston or Miami. Most of these flights leave only on the weekends though. Weekday departures have to be booked to Tegucigalpa or San Pedro Sula Airport in mainland Honduras and then a connection can take you to Roatan or a ferry.

Some of the most popular reasons people choose to return to Roatan are the ease of diving, the condition of the reefs, and the clean/clear water. Respondents also stated that Roatan's clean, safe, atmosphere, the small town feel, and the polite, friendly people, were also reasons guests chose to return. In addition, the cost, the resort , the beauty of the island and the great weather were all cited reasons to return.

Guests typically stayed at the resort from one to fourteen days with the most frequent stay amounting to seven days or one week. Most have been to Roatan one to ten times with some having gone up to 20 times. Subjects were also asked about what

reasons they would want to return specifically to Anthony's Key Resort in Roatan. As Table 9 shows, the diving experience, convenience and diversity of dive sites was cited most often along with the knowledgeable, friendly staff including efficient dive masters/operations. Additionally, responses that were repeated often were the food quality, the beauty of the resort/view from restaurant, the all-inclusive value of the resort, the rooms: beautiful, well cleaned, room options, cabanas on the water, and the available activities. Specifically, the kid's Dolphin Camp and the new spa. Other responses can be viewed in Table 9 on the next page.

Table 9: Reasons to Return to Anthony's Key Resort

What features of Anthony's Key make you want to return?	
The Dolphins	1
The diving experience Dive convenience Dive sites (diverse)	11 3 3
Service	1
food	13
Dive master Alson Dive master John Pete Kevin	1 2 1 1
Boat Captain Rupert	3
Staff (knowledgeable, friendliness)	16
Great resort	1
activities Kids dolphin camp New spa	4 2 1
Efficient dive operation / dive masters	6
Not too crowded	1
Beauty of Anthony's Key View from restaurant picturesque	8 1 2
Excellent visibility	1
All inclusive / value	5
Beautiful rooms (well cleaned) Room options	8 1
On-site medical facilities	1
Layout of resort Options of privacy or interaction	1 2
new dedicated snorkel boat with 2 daily trips Well maintained dive boats	1 1
Safety	1
weather	1
Bar	2
Relaxing/comfortable atmosphere	2
Treatment of dolphins	1

Objective #4: How can resorts gain a larger share of the diving market?

The final aim of this study was to look at how resorts (particularly Anthony's Key Resort in Roatan) could gain a larger share of the diving market. The respondents were asked to rate current resort amenities, dive operations, island characteristics etc. It is

encouraging to note that none of the attributes were systematically failing to meet visitor expectations.

In order to compare a range of variables, a non-parametric test, was used for the categorical (nominal or ordinal) variables which may not be normally distributed. The Chi-Square was conducted to determine if certain variables that explain diver location choices fit into an expected frequency distribution. This test was run on the variables from questions 21 - 37 taken from the resort survey that represent divers See Appendix B.

In Geographic Measurement and Quantitative Analysis, Earickson and Harlin (1994) define the Chi-square test as follows:

The chi-square test is administered to aid in determining whether the two sets of frequencies are statistically independent. If differences in the expected frequencies and the observed frequencies are small, the conclusion is that the differences could have arisen by chance. In the opposite case, if the discrepancies between what is expected and what is observed are large, the differences could not have arisen by chance.

- H_0: The proportion of answers to the likert scale questions are equally distributed.

  H_a: The proportion of answers to the likert scale questions are not equally distributed.

- Df (Degrees of Freedom) = n-1 = 5-1 = 4

- Equation:

$$\chi^2 = \sum \frac{(\text{Observed Value} - \text{Expected Value})^2}{(\text{Expected Value})}$$

Questions 21 – 33 provided statements where respondents had to indicate how they felt on a likert scale with one being extremely dissatisfied, and five being extremely satisfied. These statements start out about Roatan and then change to be specifically about Anthony's Key Resort. Questions 34 – 37 provided statements where respondents had to indicate how well they agree with one being strongly disagree and five being strongly agree (see Appendix B).

The majority of people surveyed (72%) were satisfied or extremely satisfied with Roatan's sanitation systems such as drinking water, and the quality of their waste system. Although this is a high satisfaction rating the island does have major issues with their water use and consumption. Tourists don't realize these issues as much since the tourist areas of Roatan tend to have slightly better water conditions that the rest of the island. The capacity of the islands' infrastructure to treat its wastewater and the capacity of surrounding marine environment to safely absorb it, has been put over the limit by the population on Roatan and its development increases in the past decade. Development occurs too close to the water and the population is too dense in many parts of Roatan for the septic systems to work effectively. Some progress has been made, such as the installation of a new treatment plant in West End. This decision was made due to the rapid development that was causing water contaminants to accumulate which endangered the area's dive tourism. The problem was that the Municipality installed collection lines, but individual homes and businesses were supposed to connect to them on their own. There was no system set up for charging users in advance, and currently, only a handful are connected (Armstrong, 2013). Only

a small fraction of sewage in Roatan receives municipal treatment. Guests in many services businesses including restaurants, resorts, shopping centers, etc. are not permitted to flush toilet paper down toilets. This sewage discharge is reducing coastal water quality and clarity and damaging the reef and is a shared issue for many Caribbean islands.

Tourists are advised to drink bottled water only, although some resorts boast sophisticated purification systems. Clean drinking water is available at restaurants and bars.

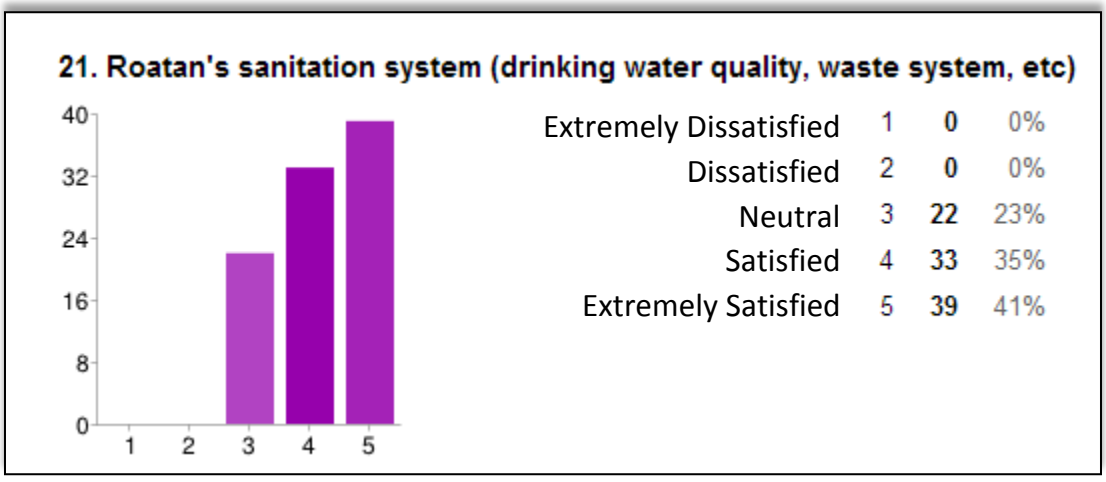


Figure 18: Roatan's Sanitation System

Table 10: Goodness of Fit - Roatan's Sanitation System

21. Roatan's sanitation system (drinking water quality, waste system, et.)		
	Frequency	Percent
3 = Neutral	22	22.7
4 = Satisfied	33	34
5 = Extremely Satisfied	39	40.2
Total	94	96.9
Missing	3	3.1
Total	97	100
Chi Square Goodness of fit test: $x^2 = 70.57$	$P=1.72*10^{-14}$	Reject the null hypothesis

When asked to rate the cleanliness of Roatan's beaches, the majority of respondents stated being either satisfied (40%) or extremely satisfied (39%). The Chi-Square Test shows that the P-value (0.000) is less than the significance level (0.05), and so the null hypothesis is rejected. This is not random error, but a real pattern. Resort owners take pride in the beaches. Groundskeepers rake the beaches every morning. The beaches are clean, large, and not crowded (except for when the cruise ships come in). Many venders roam the beaches with jewelry, t-shirts, and other souvenirs for a fraction of the cost of other venders on the island. This is illegal on the island, yet as in many other Caribbean islands, common place. The sand is a light powdered color and very soft. Many water sports are offered at the beaches and you can sign up right there without having to go to an actual building. Water taxis are also available and are cheaper than land taxis and provide a fantastic view of the island beaches.

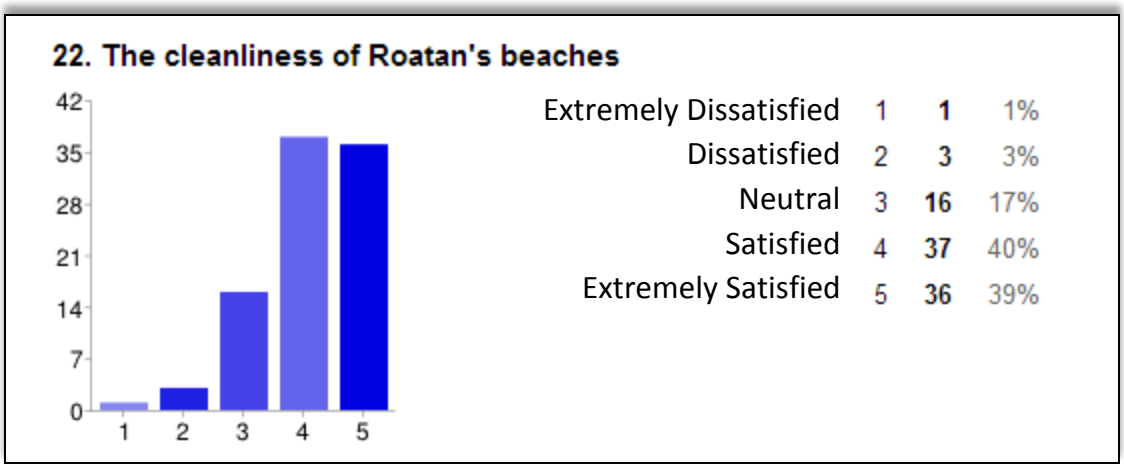


Figure 19: Cleanliness of Roatan's Beaches

Table 11: Goodness of Fit - Cleanliness of Roatan Beaches

22. The cleanliness of Roatan's beaches		
	Frequency	Percent
1 = Extremely Dissatisfied	1	1
2 = Dissatisfied	3	3.1
3 = Neutral	16	16.5
4 = Satisfied	37	38.1
5 = Extremely Satisfied	36	37.1
Total	93	95.9
Missing	4	4.1
Total	97	100
Chi Square Goodness of fit test: $x^2 = 64.58$	$P=3.15*10^{-13}$	Reject the null hypothesis

Eighty-five percent of respondents were either satisfied, or extremely satisfied with the dive prices on Roatan (See figure 14 on pg 125). The Chi-Square Test shows that the P-value (0.000) is less than the significance level (0.05), and so the null hypothesis is rejected. This is not random error, but a real pattern (see table 12).

Compared to other Caribbean dive destinations, diving in Roatan is more affordable. Resort prices on Roatan are highly competitive with other Caribbean Resorts. Resort price satisfaction came in slightly lower than dive price satisfaction at 72% being either satisfied or highly satisfied.

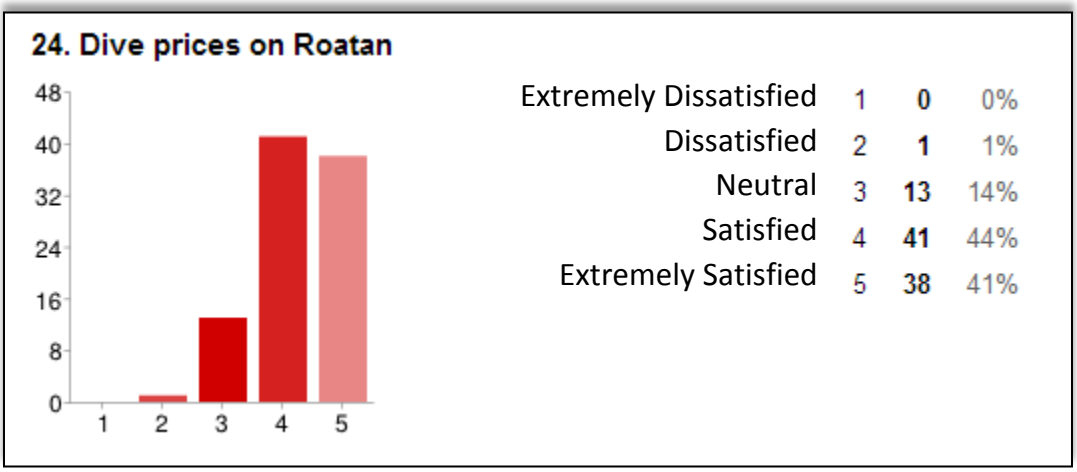


Figure 20: Roatan Dive Prices

Table 12: Goodness of Fit - Dive Prices on Roatan

24. Dive prices on Roatan		
	Frequency	Percent
2 = Dissatisfied	1	1.0
3 = Neutral	13	13.4
4 = Satisfied	41	42.3
5 = Extremely Satisfied	38	39.2
Total	93	95.9
Missing	4	4.1
Total	97	100.0
Chi Square Goodness of fit test: $x^2 = 84.15$	$P=2.30*10^{-17}$	Reject the null hypothesis

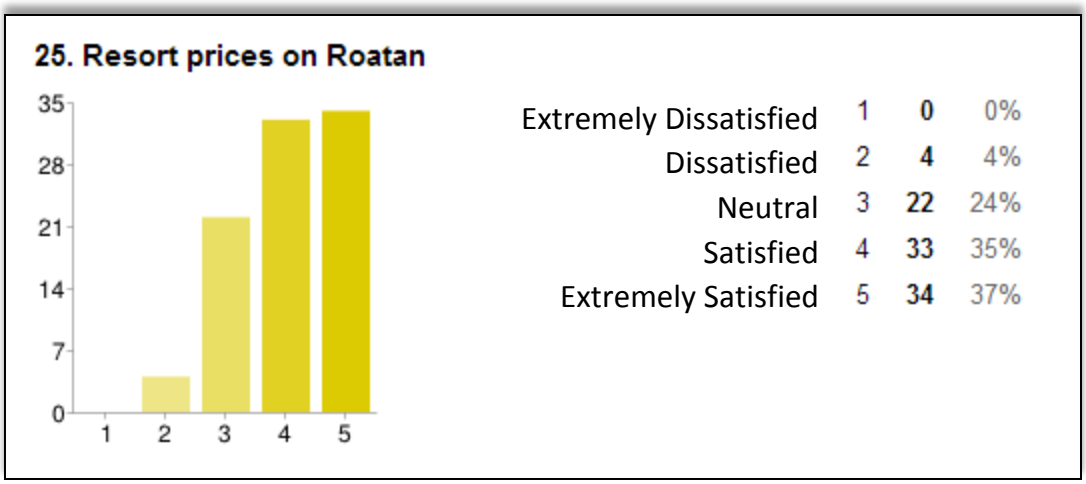


Figure 21: Roatan Resort Prices

Table 13: Goodness of Fit - Resort Prices on Roatan

25. Resort prices on Roatan		
	Frequency	Percent
2 = Dissatisfied	4	4.1
3 = Neutral	22	22.7
4 = Satisfied	33	34.0
5 = Extremely Satisfied	34	35.1
Total	93	95.9
Missing	4	4.1
Total	97	100.0
Chi Square Goodness of fit test: $x^2 = 54.58$	$P=3.98*10^{-11}$	Reject the null hypothesis

The majority of the respondents were either satisfied or extremely satisfied with the ability to communicate in your native language on the island. No one stated being dissatisfied or extremely dissatisfied. In addition to their native language, Spanish, many people on the island speak English – especially at the resorts. The U.S. dollar is

also widely accepted, which gives many travelers the comfort of using a familiar currency.

Figure 22: Communicating in Your Native Language

Table 14: Goodness of Fit - Ability to Communicate in Your Native Language

26. The ability to communicate in your native language on the island		
	Frequency	Percent
3 = Neutral	9	9.3
4 = Satisfied	20	20.6
5 = Extremely Satisfied	64	66.0
Total	93	95.9
Missing	4	4.1
Total	97	100
Chi Square Goodness of fit test: $x^2 = 153.08$	$P=4.46*10^{-32}$	Reject the null hypothesis

The level of professionalism of dive operators on the island was rated very high. Ninety four percent of respondents were either satisfied, or extremely satisfied with the level of professionalism of dive operators on the island. The Chi-Square Test shows that

the P-value (0.000) is less than the significance level (0.05), and so the null hypothesis is rejected. Most dive operators have been in business for a while take their jobs very seriously and have a lot of pride in their work.

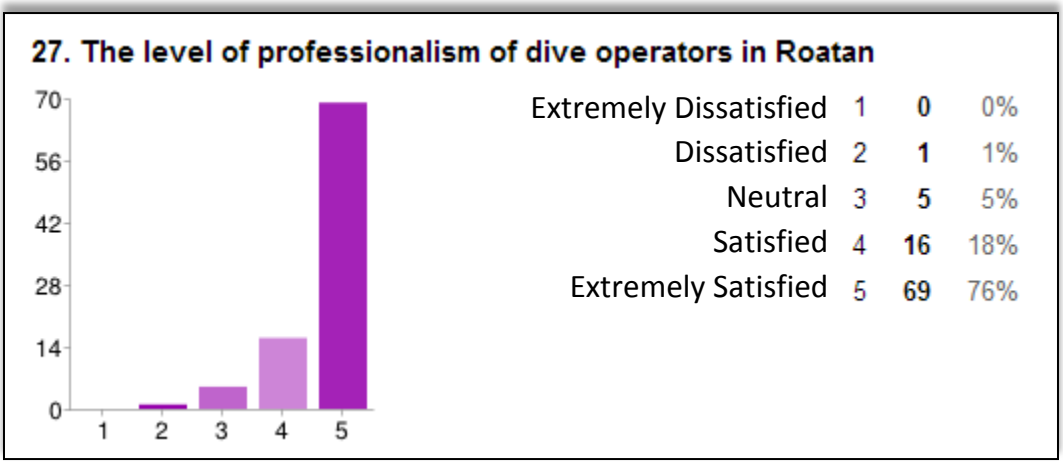


Figure 23: Level of Professionalism of Dive Operators in Roatan

Table 15: Goodness of Fit - Dive Operator Professionalism in Roatan

27. The level of professionalism of dive operators in Roatan		
	Frequency	Percent
2 = Dissatisfied	1	1.0
3 = Neutral	5	5.2
4 = Satisfied	16	16.5
5 = Extremely Satisfied	69	71.1
Total	91	93.8
Missing	6	6.2
Total	97	100.0
Chi Square Goodness of fit test: $x^2 = 183.09$	$P=3.67*10^{-39}$	Reject the null hypothesis

Accessibility of diving also received a satisfied or extremely satisfied response from the majority of those surveyed (93%). The Chi-Square Test shows that the P-value

(0.000) is less than the significance level (0.05), and so the null hypothesis is rejected. Many of Roatan's reefs are accessible from the shore and or a short boat ride away. Most reefs don't take more than around 15 minutes to get to compared to many other Caribbean dive locations that take one – two hours.

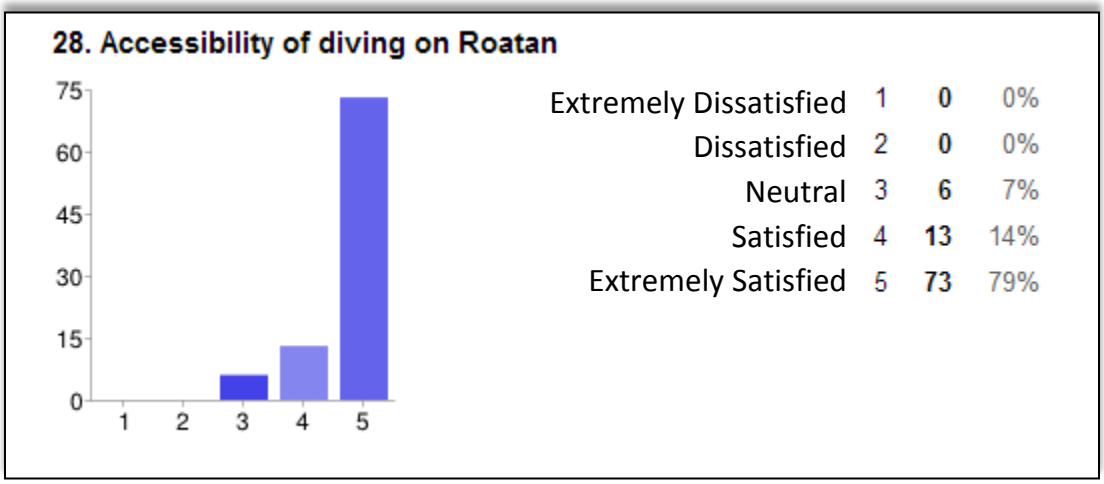


Figure 24: Accessibility of Diving on Roatan

Table 16: Goodness of fit - Accessibility of Diving on Roatan

28. Accessibility of diving on Roatan		
	Frequency	Percent
3 = Neutral	6	6.2
4 = Satisfied	13	13.4
5 = Extremely Satisfied	73	75.3
Total	92	94.8
Missing	5	5.2
Total	97	100.0
Chi Square Goodness of fit test: $x^2 = 208.76$	$P=4.91*10^{-44}$	Reject the null hypothesis

Control of insects got the lowest satisfaction ratings. The Chi-Square Test shows that the P-value (0.000) is less than the significance level (0.05), and so the null

hypothesis is rejected. Roatan has insects called sandflies or no-see-ums. These primarily occupy beach areas and their bite leaves a sore red mark. No-see-ums are in the family Ceratopogonidae, the biting midges. They are true flies in the Order Diptera, which means two wings (IPM of Midwest Landscapes, 2013). There are many species, and some of them attack other insects while others feed on mammalian blood. The larvae of these flies are aquatic or semi-aquatic and live in slow-moving or still water and in damp areas, including decaying vegetation, mud and the water that collects in tree holes, old tires and various containers just like mosquitoes.

Their bites are out of proportion to their size. You might feel a sudden, stabbing, burning bite when you haven't seen anything. But often you don't feel the bite until hours later, when it starts to itch. Their bites often form a small blister in the middle. Some people react more with the bites than others. While on site, I got bit a lot and experienced a stabbing pain, but it was quick, left a red circular mark and then went away within a few hours. With sensitive people, the blisters can be large and runny, about the size of a quarter, and persist for days or even weeks. Some resorts tried to combat this by spraying the beaches, but the chemicals were not good for marine life so many have stopped. Locals suggest rubbing lime juice on sand fly bites. I found this to help with the irritation as well as with the duration of the mark, however, my skin's reaction to the bites was mild. Those with more severe reactions to the bites might try this method to see if they get relief as well.

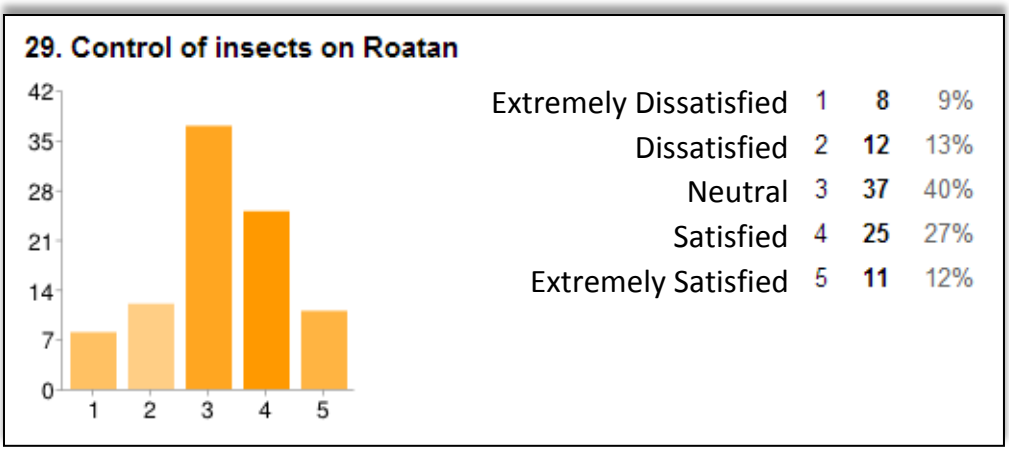


Figure 25: Control of Insects on Roatan

Table 17: Goodness of Fit - Control of Insects on Roatan

29. Control of insects on Roatan		
	Frequency	Percent
1 = Extremely Dissatisfied	8	8.2
2 = Dissatisfied	12	12.4
3 = Neutral	37	38.1
4 = Satisfied	25	25.8
5 = Extremely Satisfied	11	11.3
Total	93	95.9
Missing	4	4.1
Total	97	100
Chi Square Goodness of fit test: $x^2 = 31.89$	$P=2.01*10^{-6}$	Reject the null hypothesis

Despite this small setback, 95% of those surveyed stated that they plan to return to Roatan. The Chi-Square Test shows that the P-value (0.000) is less than the significance level (0.05), and so the null hypothesis is rejected. Roatan is a big market for repeat visitors. The responses most often stated to support their decision to want to

return were the quality of the reefs/diving, the small town feel with polite, friendly local people, the ease of getting to dive sites, and the beauty of the island.

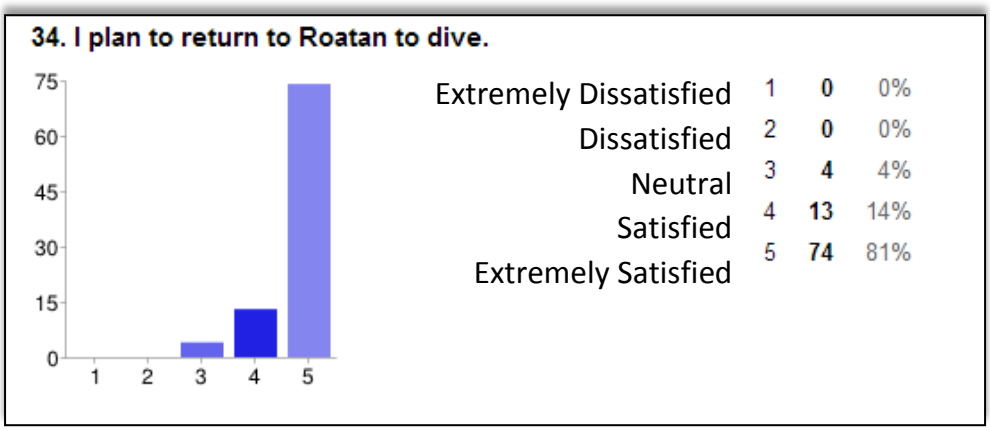


Figure 26: Plan to Return to Roatan to Dive

Table 18: Goodness of Fit - Plans to Return to Roatan to Dive

34. I plan to return to Roatan to dive.		
	Frequency	Percent
3 = Neutral	4	4.1
4 = Satisfied	13	13.1
5 = Extremely Satisfied	74	76.3
Total	91	93.8
Missing	6	6.2
Total	97	100.0
Chi Square Goodness of fit test: $x^2 = 220.04$	$P=1.83*10^{-46}$	Reject the null hypothesis

The next part of the survey included questions specific to Anthony's Key Resort in Rotan. Guests were slightly more satisfied with the food quality than the food variety and bar service on the resort, but mostly satisfied or highly satisfied nonetheless. The Chi-Square Test shows that the P-value (0.003) is less than the significance level (0.05), and so the null hypothesis is rejected. The all inclusive package that Anthony's

Key offers includes three meals daily that are served buffet-style or by wait staff, depending on the menu. A special island buffet lunch with local foods is put on once a week on Maya Key. Guests are taken there by boat. A unique "Island Fiesta Night" dinner is also put on for guests once a week on Anthony's Key. Guests are encouraged to participate in events such as limbo contests and crab races and live music entertainment is provided along with fire dancers and authentic Garifuna music and dance. Options are given for breakfast lunch and dinner and posted on a board just outside the restaurant. Less than half (45%) also ate at a restaurant off site. Most of those who ate off site had a negative experience although a few enjoyed their meals.

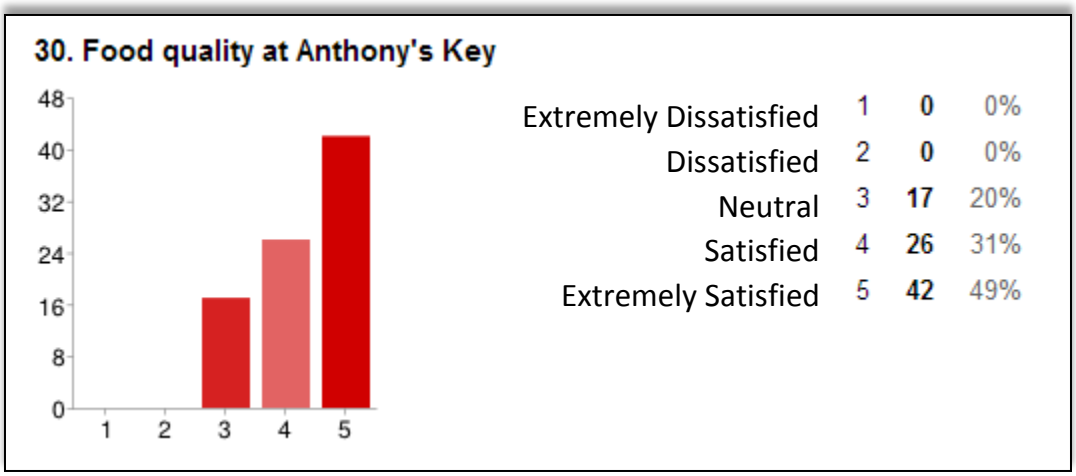


Figure 27: Food Quality - Anthony's Key

Table 19: Goodness of Fit - Food Quality at Anthony's Key

30. Food quality at Anthony's Key		
	Frequency	Percent
3 = Neutral	17	17.5
4 = Satisfied	26	26.8
5 = Extremely Satisfied	42	43.3
Total	85	87.6
Missing	12	12.4
Total	97	100.0
Chi Square Goodness of fit test: $x^2 = 75.51$	$P=1.54*10^{-15}$	Reject the null hypothesis

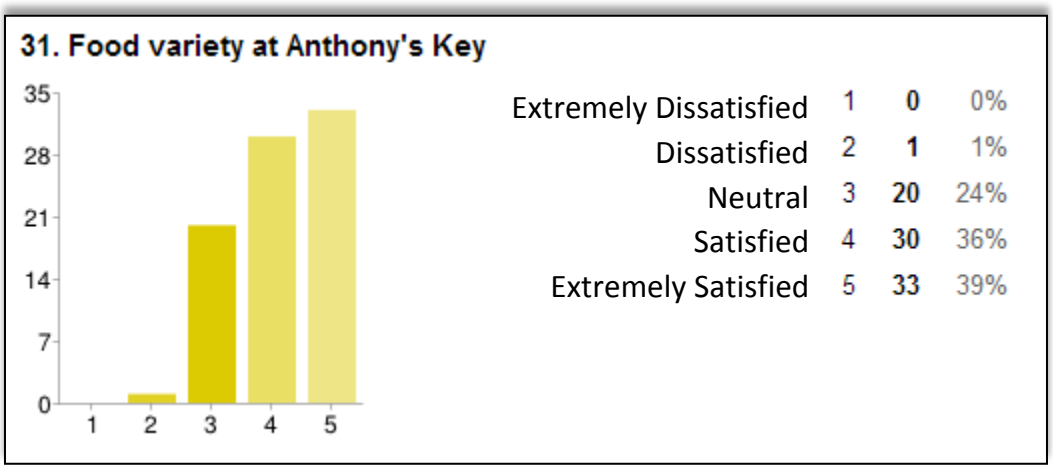


Figure 28: Food Variety - Anthony's Key

Table 20: Goodness of Fit - Food Variety at Anthony's Key

31. Food variety at Anthony's Key		
	Frequency	Percent
2 = Dissatisfied	1	1.0
3 = Neutral	20	20.6
4 = Satisfied	30	30.9
5 = Extremely Satisfied	33	34.0
Total	84	86.6
Missing	13	13.4
Total	97	100
Chi Square Goodness of fit test: $x^2 = 58.26$	$P=6.72*10^{-12}$	Reject the null hypothesis

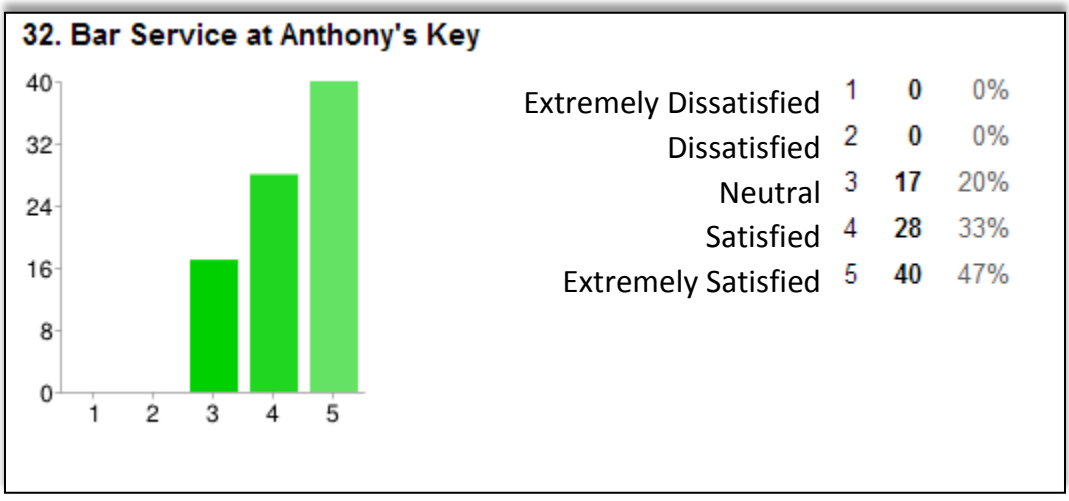


Figure 29: Bar Service - Anthony's Key

Table 21: Goodness of Fit - Bar Service at Anthony's Key

32. Bar service at Anthony's Key		
	Frequency	Percent
3 = Neutral	17	17.5
4 = Satisfied	28	28.9
5 = Extremely Satisfied	40	41.2
Total	85	87.6
Missing	12	12.4
Total	97	100.0
Chi Square Goodness of fit test: $x^2 = 72.24$	$P=7.65*10^{-15}$	Reject the null hypothesis

Ninety seven percent of guests were satisfied or mostly satisfied with the grounds maintenance and the majority found that the front desk was helpful. The Chi-Square Test shows that the P-values for these questions (0.009, and 0.000 respectively) are less than the significance level (0.05), and so the null hypothesis is rejected.

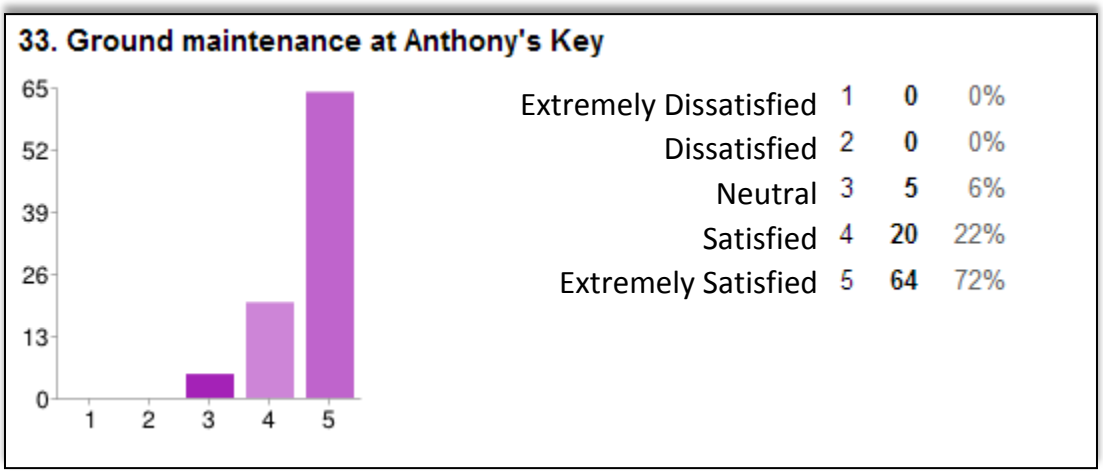


Figure 30: Ground Maintenance - Anthony's Key

Table 22: Goodness of Fit - Ground Maintenance at Anthony's Key

33. Ground maintenance at Anthony's Key		
	Frequency	Percent
3 = Neutral	5	5.2
4 = Satisfied	20	20.6
5 = Extremely Satisfied	64	66.0
Total	89	91.8
Missing	8	8.2
Total	97	100.0
Chi Square Goodness of fit test: $x^2 = 164.99$	$P=1.24*10^{-34}$	Reject the null hypothesis

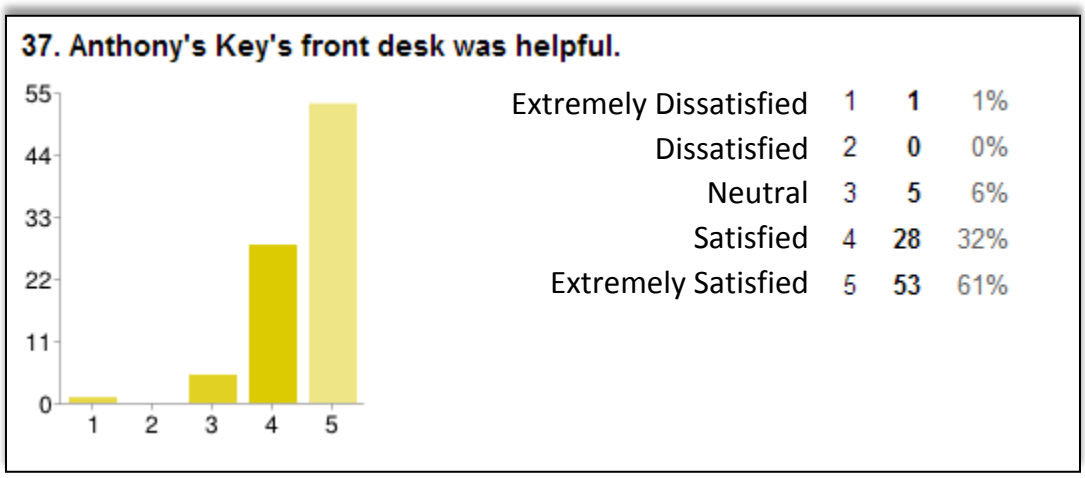


Figure 31: Front Desk Helpfulness

Table 23: Goodness of Fit - Anthony's Key Front Desk Was Helpful

37. Anthony's Key's front desk was helpful		
	Frequency	Percent
1 = Extremely Dissatisfied	1	1.0
3 = Neutral	5	5.2
4 = Satisfied	28	28.9
5 = Extremely Satisfied	53	54.6
Total	87	89.7
Missing	10	10.3
Total	97	100
Chi Square Goodness of fit test: $x^2 = 120.99$	$P=3.28*10^{-25}$	Reject the null hypothesis

Eighty –eight percent of those surveyed stated that they plan to return to Anthony's Key Resort and feel that it was a good value for the money. The Chi-Square Test shows that the P-value (0.000) is less than the significance level (0.05), and so the null hypothesis is rejected. The responses most often stated to support their decision to return were the dive experience, convenience, and variety; the resort staff as well as the dive masters and boat captains; the food; the rooms; and the beauty of the resort in general. Other key reasons to want to return to Anthony's Key that were mentioned were the value and the activities offered.

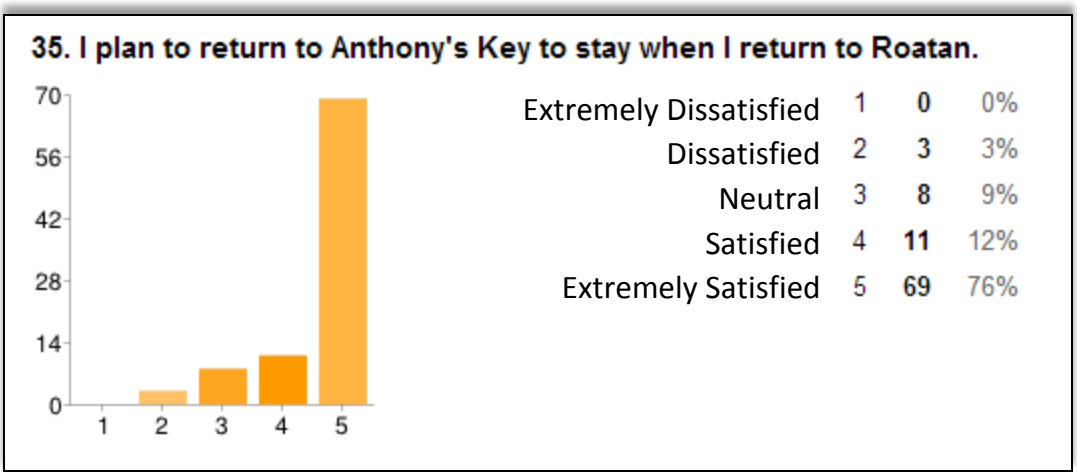


Figure 32: Plans to Return to Anthony's Key

Table 24: Goodness of Fit - Plans to Return to Anthony's Key to Stay

35. I plan to return to Anthony's Key to stay when I return to Roatan.		
	Frequency	Percent
2 = Dissatisfied	3	3.1
3 = Neutral	8	8.2
4 = Satisfied	11	11.3
5 = Extremely Satisfied	69	71.1
Total	91	93.8
Missing	6	6.2
Total	97	100.0
Chi Square Goodness of fit test: $x^2 = 181.25$	$P=4.01*10^{-38}$	Reject the null hypothesis

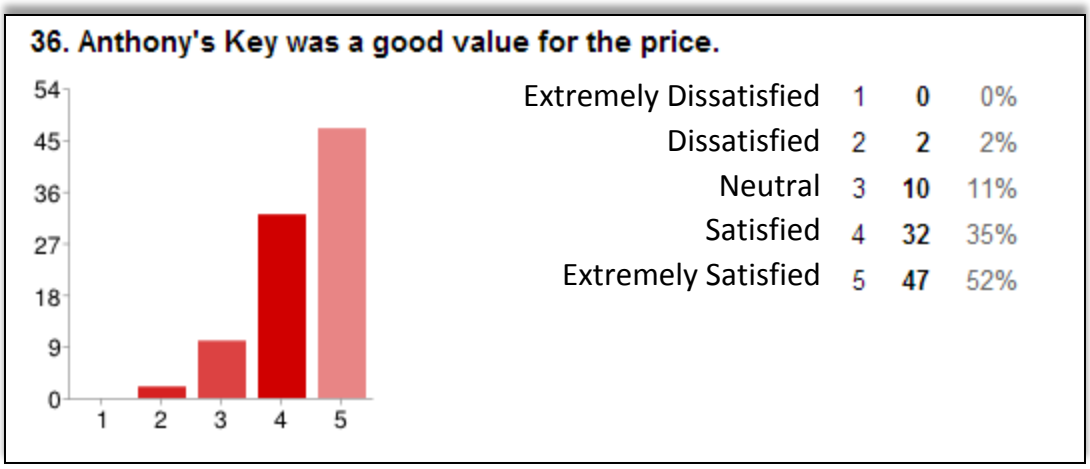


Figure 33: Anthony's Key Value for Price

Table 25: Goodness of Fit - Anthony's Key Was a Good Value for the Price

36. Anthony's Key was a good value for the price.		
	Frequency	Percent
2 = Dissatisfied	2	2.1
3 = Neutral	12	10.3
4 = Satisfied	32	33.0
5 = Extremely Satisfied	47	48.5
Total	91	93.8
Missing	6	6.2
Total	97	100.0
Chi Square Goodness of fit test: $x^2 = 90.77$	$P=9.04*10^{-19}$	Reject the null hypothesis

The on-site activities that guests participated in the most were the shark dive and dolphin encounter. The Chi-Square Test shows that the P-value (0.000) is less than the significance level (0.05), and so the null hypothesis is rejected. This is not random error, but a real pattern. The next most popular activities at the resort were the

Canopy Tour, Dolphin Dive/ Swim, and Horseback Riding. The most popular off-property activity was the Copan Ruins while some mentioned white water rafting, San Pedro Sula City - Shopping and Sightseeing, and Cuero y Salado Wildlife Refuge.

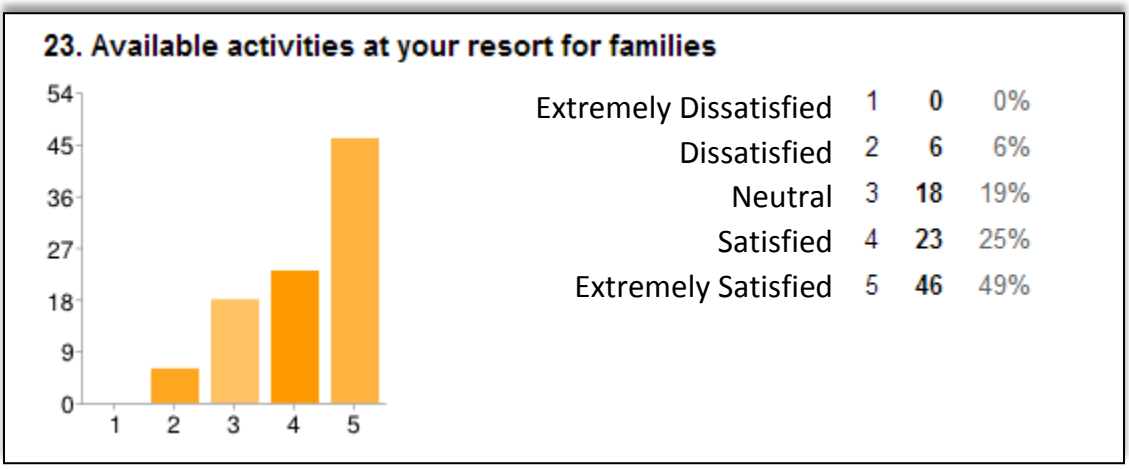


Figure 34: Satisfaction with Available Activities for Families at Resort

Table 26: Goodness of Fit – Satisfaction with Available Activities at the Resort for Families

23. Available activities at your resort for families		
	Frequency	Percent
2 = Dissatisfied	6	6.2
3 = Neutral	18	18.6
4 = Satisfied	23	23.7
5 = Extremely Satisfied	46	47.4
Total	93	95.9
Missing	4	4.1
Total	97	100
Chi Square Goodness of fit test: $x^2 = 68.56$	$P=4.57*10^{-14}$	Reject the null hypothesis

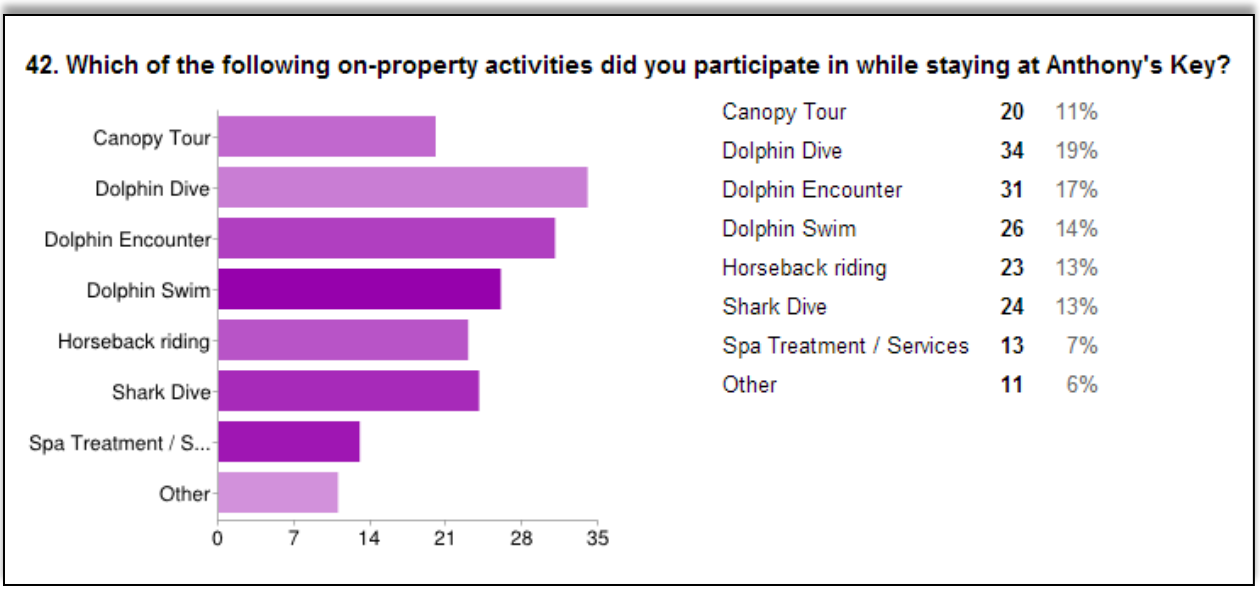


Figure 35: AKR Activities Guests Participated in

Anthony's Key Resort received high satisfaction ratings on every statement. When marketing a resort to diver's a company would do well to hit on previous guest's satisfaction ratings such as these. The next section will analyze information received from the interviews to further answer the objective questions.

Interviews

Twelve interviews were completed. Five Key informant interviews were completed with specialists and seven semi-structured interviews were completed with divers.

Key Informant Interviews (numbers one and two): Resort Education Coordinator; Island/Resort Biologist

One of the key informant interviews completed for this project was with Jennifer Keck, the Education Coordinator for the Roatan Institute of Marine Science (RIMS) at Anthony's Key Resort. Jennifer assists collegiate and secondary educators in developing

course itineraries and arranging boat and classroom times for field work. She also provides lectures to classes and serves as a naturalist by, developing independent research projects and providing important information about the local marine environments. Jennifer is a certified dive master and also provides assistance on field studies and field trips. The second key informant interview was done with the resort's dolphin biologist, Teri Bolton. Teri works for RIMS as well and more specifically works with their dolphin program. She is a liaison between the zoologist and veterinarian and heads the ongoing projects and dolphin research at the RIMS facility.

RIMS was founded in 1989 with the primary objective of preserving Roatan's nature resources through education and research. RIMS research facility specializes in Dolphin research. Teri has been employed at RIMS for more than twenty-seven years. More than two dozen Atlantic Bottlenose dolphins make their home at the two acre facility located off Bailey's Key. Bailey's Key is a natural lagoon facility within Anthony's Key Resort. The dolphin activities are among the most unique in the world and range from a simple beach encounter with photo opportunity to snorkeling or diving with the dolphins, summer camp for kids, specialty education courses and a trainer-for-the-day program. Teri commented that what separates the RIMS program from many others around the world is that the dolphins are not captive in a man-made pool but free to roam the expansive lagoon. Some even leave the facility regularly to participate in the hotel's free dolphin show or accompany dive groups but they always return of their own free will. During my encounter with the dolphin Polly, I was able to go behind the scenes for a day-in-the-life of both the trainers and the dolphins at RIMS. In addition to

feeling the top and underside of the dolphin and even her teeth, I did everything from sorting fish for each dolphin's specific diet to learning about husbandry and basic training techniques and communication strategies. This fit in seamlessly with what I learned from the resort biologist; "tourists nowadays are looking for more than just a drink and dive, they are looking for education. They want to learn something about the reef, the fish, and the culture of the island. Tourists even choose cruise ships just because they offer and educational piece" (Resort Biologist Interview, 2013)

Both interviewees were asked semi-structured questions about Roatan: how it has changed and how it fits in with other Caribbean diving locations. Both explained that the island's infrastructure has become more developed as the population has increased and there are more expatriates and people there from the mainland. The issue of the island being more crowded can be equally good and bad. In some ways it brings more convenience to the island as higher end tourist demand more high end accommodations and infrastructure. For example a new sewage system has just been established in the West End. The only problem is that residents weren't explicitly told how many people could hook up to it and how much they would have to pay. On the other hand, crowding can be inconvenient as more and more people are looking for a 'secluded' get a way. The Island also used to be more difficult to get to. Only divers and anthropologists came there with one flight off the island per day. Now there are a number of major airlines that frequent the Island with nonstop flights from five U.S. states. The airport was re-modeled and expanded at the beginning of 2013.

As far as the diving industry, more dive shops have sprung about across the island. Instead of having just a few large dive shop operations, there are now several smaller shops associated with smaller resorts. Another change in the diving industry is that the minimum diving age has changed from 12 to 10. Over time, the instructors and dive masters have learned more about how diver's actions affect reefs and can therefore relay that information to the guests. Habitat degradation has been the most alarming change to the reef over the last few decades as well as the imposing amount of garbage in the ocean, specifically, plastic. Despite this, due to education and the island's Marine Park, over the years the reef has seen increased turtle and sea horse sightings. In the protected area, the number of Lionfish has gone down substantially although on the Eastern part of the island which is not part of the protected marine park, the invasive species is still spotted quite frequently.

The RIMS has implemented a long term monitoring program in operation since 1996 that is the only organization on the island with a database on the condition of the coral. A fish identification slideshow is provided for Anthony's Key's guests along with community members that provide information on the coral and fish types found within the reefs along with protection suggestions. This, along with the many educational programs the RIMS offers, has helped divers and community members alike to learn the most effective ways to protect the reefs. Education and information are important, but this is most effectively done over time. It takes generations of learning and understanding before a change in the mindset of the majority of the human race takes place and is transferred to actions. To help this cause, it is important for divers to

support the Marine Parks and to purchase dive tags. It is also crucial for divers to pay attention to briefings at dive shop orientations where information is given on how to watch buoyancy and not touch coral, especially the cruise shippers. A lot of people don't realize that coral is an animal.

According to Teri, the top three things a diver looks for when choosing a Caribbean dive location is 1.) Expense, 2.) The Proximity / ease of dive locations and 3.) Ratings from popular dive magazines, etc . Roatan seems to do great with numbers one and two as it is still fairly inexpensive to dive in Roatan verses other Caribbean dive locations and the proximity to the reef is fantastic. Ratings however are hit and miss. If you look at some of the most popular dive magazines such as Scuba Diver magazine and dive websites, you will find Roatan in the top, even top three for some sites, but you won't find it even listed in other sites/ magazines. This creates a missed opportunity for interested divers to read about what the island has to offer divers, but on the other hand, the island is able remain less known which helps to keep its mysterious charm, and allows it to be a new place to discover, which is always alluring to tourists.

Anthony's Key Resort in Roatan has done a superb job at making people feel at home and want to come back. The staff gets to know them and even becomes friends. According to the resort biologist, word of mouth is one of the most powerful forms of advertising for Anthony's Key. Most people who go there can't help but want to come back and let every diver they know about this secret gem. Marine biologists and scientists from all over the world come to AKR to study dolphin intelligence and health, and NOVA filmed a dolphin television special at AKR recently.

Key Informant Interviews (number 3): Resort Dive Master

Another key informant interview was conducted with John, one of the dive masters at the resort. The Divemaster plays a fundamental role within the dive operation of a resort. They supervise diving activities for certified divers and can strongly influence the safety and fun divers take pleasure in while diving. Skills that make a good divemaster at Anthony's Key Resort are as follows: exemplary diving skills, rescue skill, professional –level knowledge of dive theory, competence as a certified assistance, dive management and supervision abilities, ethical role model behavior, and enthusiasm.

The divemaster interviewed explained that on the morning that guests arrive, a dive shop orientation is given where the guests are assigned a boat for the length of their stay. Anthony's Key boasts a modern fleet of three Custom Pro 48 and seven Pro 42 dive boats. The Custom Pro 42 boat takes divers to 35 various sites located 5 to 30 minutes away. Unrivaled in the Caribbean region, the AKR fleet was designed for comfort and safety, with convenience as an added bonus. The Pro 42s can accommodate up to 15 divers and two crew. They have 44 customized tank racks, a walk-through transom, and with a deep-V in the front, the Pro 42 is a fast, sea-worthy, and versatile boat with the ability to take on rough seas and at the same time reach remote shallow reefs. Each boat is equipped with dry storage, a fresh water rinse tank for cameras, a cooler with drinking water, and a covered area. The Pro 48s can accommodate 24 divers and two crew. The 48s have sixty-four customized tank racks, a walk-through transom and opening steps to the bow. An additional 100 square feet on

the fly-bridge and added dry storage compartments, create space to gear up and walk around the boat.

Each day the boats leave at 8:30 a.m., 10:30 a.m. and 2:30 p.m., staffed by a dive master and captain. This ensures that divers see a variety of dive sites throughout the week without repetition and allows the staff to get to know each diver's respective needs and abilities to better serve them. You are then briefed on diving procedures, how to sign-up for dives on the dive board, and a required warm-up dive and equipment check is given dockside prior to your first dive. You dive as much or as little as you want. Most dive sites are less than 5 minutes from the dock. Equipment is available for rent, and an air-conditioned classroom is available for a PADI Continuing Educational Program that offers resort dive courses. A variety of courses and certifications are offered as well. Dive masters as well as instructors strive to create a professional, yet welcoming atmosphere. They pride themselves on getting to know and interacting with the guests as well as staying abreast of education and changes in their field. In addition to helping to maximize positive dive experiences, the dive operation staff strives to promote awareness of best practices in order to support the longevity and sustainability of the reefs.

Key Informant Interview (number 4): Marketing and Sales Director

The next interview occurred via phone and e-mail and was conducted with the resort's marketing and sales director, Claudia Cuevas, who has been with Anthony's Key Resort for the past nine years.

According to Claudia, the corporation currently advertises with many different companies / magazines all over the world through both print and online media in order to reach the dive market. These include:

> *Sport Diver, Scuba Diving, Dive Training, Buceadores – Spain, Mergulho – Brasil, Fenafuth- Honduras, Outside Magazine, Dive Mag.com – Brasil, Tauchen – Germany, Diver UK - United Kingdom, DAN- Diver Alert Network, Nexos - American Airline, PADI.com (in English, Spanish, German, French and Portuguese), Delta Sky Magazine, Jax Fax , National Geographic Traveller, Dive News Wire, Mailpound, AQUA – Spain, Direct Wholesaler - Caradonna's online page and Maduro's online page.*

In addition to advertising in popular dive and tourism magazines, Anthony's Key uses online marketing tools such as social media, Trip Advisory, Facebook, Twitter, Pinterest SEO and their 13 K opt-in database. The 13K opt-in database is a database of 13 thousand contacts who 'opted in' or gave Anthony's Key Resort permission to send them e-mails with specials and news on AKR. Anthony's Key also hosts Familiarization Trips (FAM trips) for wholesalers where they offer a lower rate for their wholesalers during the low season to visit the resort for a couple of nights and experience it themselves. This is one of the most effective forms of advertisement as personal experience is always regarded higher than a memorized sales pitch. They also attend trade shows for diving and general tourism around the world (See figure 37).

2013 TRADE SHOWS		
NAME	CITY	DATE
Our World Underwater	Chicago, IL	Feb 15 - Feb 17
Toronto Outdoor & Adventure Show	Toronto, Canada	Feb 22 - Feb 24
Dive Travel Show	Madrid, Spain	Mar 1 - Mar 3
Padi Dive Festival	Sao Paulo, Brasil	Mar 8 - Mar 10
Beneath the Sea	Secaucus, NJ	Mar 22 - Mar 24
Water, Sports & Travel Festival	Fortlauderdale, FL	Apr 26 - Apr 28
A-1 Scuba Show	Denver, CO	May 18 - May 19
Scuba Show	Long Beach, CA	Jun 8 - Jun 9
MLT University	Minneapolis, MN	Sep 28 - Sep 30
DEMA	Orlando, FL	Nov 6 - Nov 9
IHT- Montreal Show	Montreal, Canada	Oct

Figure 36: Anthony's Key's 2013 Trade Shows

Source: http://www.anthonyskey.com/about/trade-show-schedule.htm

The type of advertisements range greatly. AKR is a family owned and has been since it opened 45 years ago by the Galindo family. AKR has been attending the trade shows and advertising in magazines for over 25 years. They just recently added the online advertising and Social Media. According to their marketing agent, word of mouth has been one of the most successful forms of advertisements. AKR has many people who started going to AKR in the seventies and are now coming back with kids, grandkids and friends. The most popular dive package they sell is their seven night Dive Package – KEY Superior. Current packages include air conditioned accommodations, three full meals a day, three single tank boat dives per day, two single tank boat night dives per week, buoyancy control workshop, shore diving during shop hours, air tanks, weight belts and weights, a day excursion to Maya Key, Island Fiesta Night on the Key, airport transfers and airline ticket reconfirmation, welcome island cocktail and orientation, kayaking, entrance to Roatan Museum, and Dolphin Show presentation.

One of the biggest changes in the diving industry over the years has been a growth in many Latin American Markets. Brazil, for example, is a large market for AKR now as they provide many younger divers as well as decision makers. Family travel is also big at AKR especially in the summer when they offer the Dolphin Summer Camp for the kids. Most people book their reservation request through AKR's online website. Some book through their preferred dive wholesaler or dive shop and some book through personal phone calls to AKR's reservations department. The increase in flight availability has lead to increases in bookings. It is a short trip (less than two hours from Miami) and the resort is only twenty minutes from the airport.

Diver Interviews

A total of 9 Divers were interviewed at Anthony's Key Resort. When asked to compare Roatan to other Caribbean diving locations, the responses were mostly in favor of Roatan. Some commented that Roatan "puts Florida to shame as the reefs are ten times bigger and much more beautiful". Other comments were that the people were kind and hospitable and the atmosphere was joyful, warm and refreshing.

When asked about what factors the diver considered when choosing Roatan to dive, guests responded that recommendation from others or from their local dive shop were the main factors they considered. All nine respondents booked their stay through a travel agency or their local dive shop. When asked why travelers booked through a particular airline, responses included: mileage, hub, group air, flight pattern, flight convenience.

Many respondents felt that Anthony's Key was unique in that you can really unplug with no TV's, phones etc. They mentioned enjoying the rustic island feel of the resort. When asked if the diver had any suggestions for a more enjoyable dive at Anthony's key many commented that they did not as they were doing a fine job. However, one suggestion put forth was to serve food such as cheese and crackers and juice or some type of snack on the boat and that perhaps some music on the boat would be a great addition to the ambiance. Another suggestion was to have a bigger grocery store, expand their dive gear assortment to include hoods, and to control the bugs (no-see-ums) better. Lastly a suggestion was put forth to include more wreck dives.

The final section will provide conclusions based on the model developed at the beginning of the research. It will then give suggestions for dive resort marketing based on the research findings.

CHAPTER

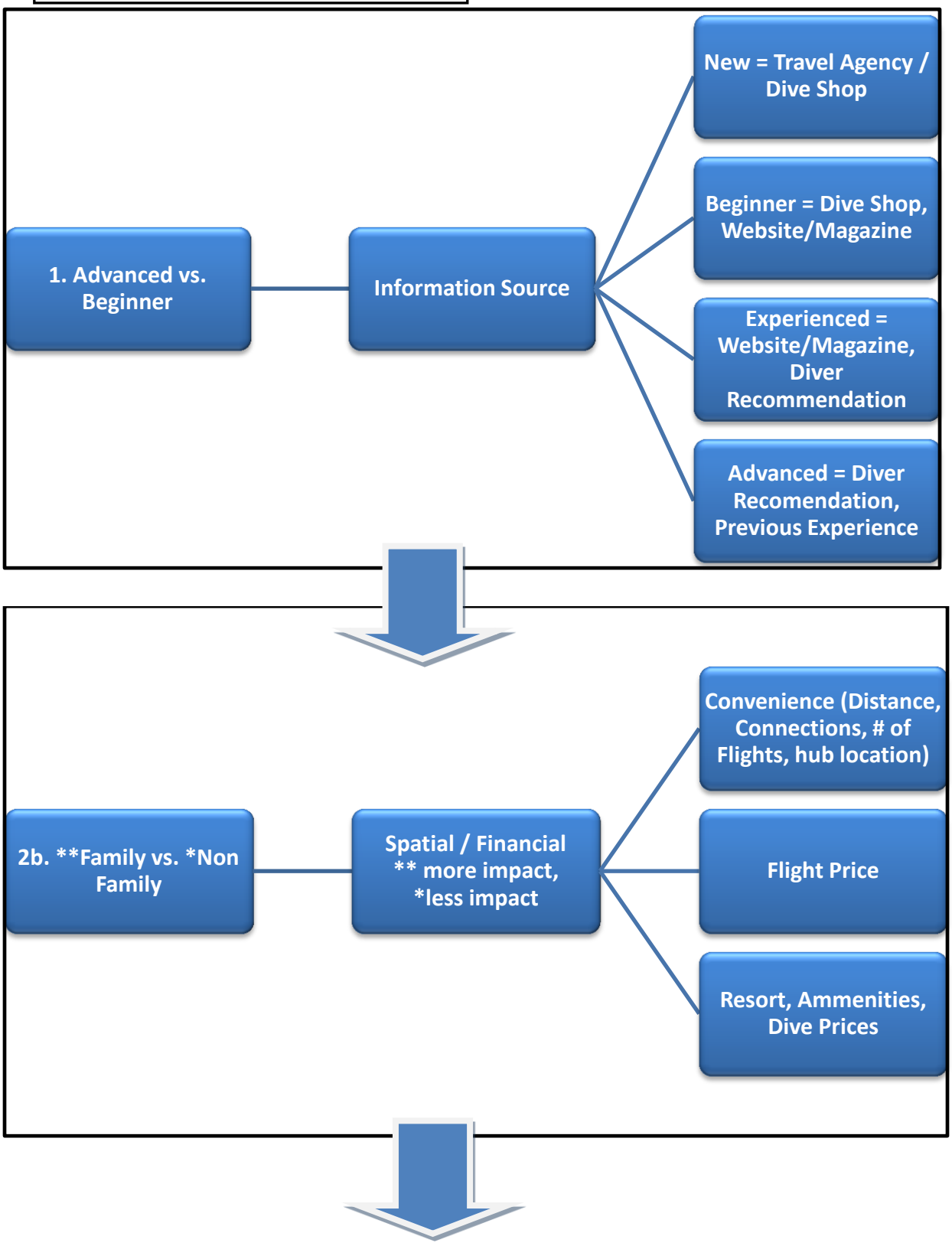
6. CONCLUSIONS

This study represents an attempt to examine where divers choose to go in the Caribbean as well as what led to their decisions and where Roatan, an island off the coast of Honduras, fits into this hierarchy. The methodology provided a means to consider a variety of conditions that serve as attributes to the decision making process. This is particularly important, as the research has shown that decision making is not simply complete after considering Eymann's Hierarchy (1995) that tourists decide to take a vacation, choose a main activity and then pick a region. This hierarchy of steps is only one aspect of diver destination decision making. In addition to these steps, the diver then goes through a series of information gathering based on their needs and expectations.

This study shows that dive tourists who are selecting a holiday destination in the Caribbean can be examined from a hierarchical perspective, where after the first stage of Eymann's model is obtained ("going on a vacation", "choosing a vacation purpose", and "choosing a geographical region") there is a second hierarchy in the decision making process. Thus, they have decided to go on vacation, have chosen the vacation purpose to be scuba diving, and have chosen the geographical region to be the Caribbean. The next step in destination decision making, involves a more interactive hierarchy model. After interviewing scuba divers, dive operator professionals, a marine biologist, an educational coordinator and resort staff as well as analyzing the results of

close to 100 surveys, this research has identified several push and pull factors that motivate divers to choose a specific destination as well as the resort chosen within that location. This hierarchy involves a three step process of decision making (figure 38).

Diver Destination Decision Model



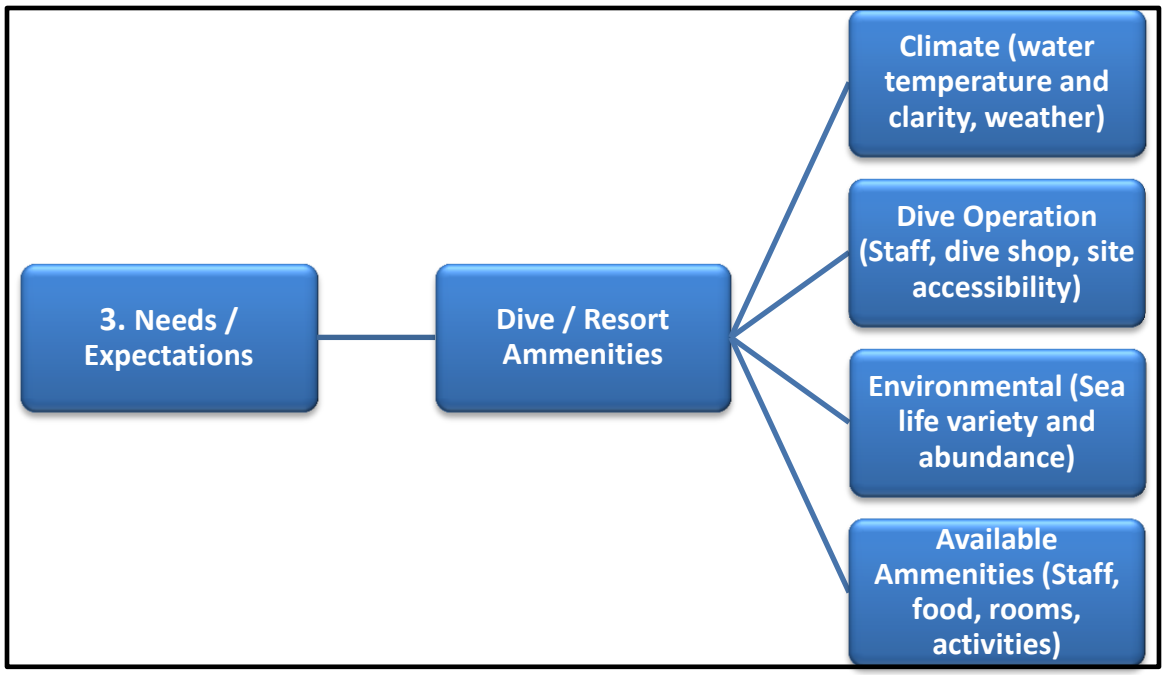


Figure 37: Diver Destination Decision Model

The model begins with the type of diver. When a diver starts out, he/she looks to other professionals and professional material to make a decision as to what destinations would be a good fit for him/her. Divers often try many new places seeking new adventures and progressively more challenging dives. This model proposes that a new diver will first look to outside sources, such as a travel agency or a dive shop, to gather information and inform their decision on where to go in the Caribbean. After doing this a few times, the beginning diver may continue to use his/her local dive shop for input in his/her decision and or also start to look at popular dive websites and magazines for more information. Following this, as one progresses as a diver, he/she begins to listen to other divers and use their recommendations as sufficient decision making criteria. As a diver advances to more experienced, he/she tends to narrow

his/her choice down to a few that fit his/her level of difficulty, and interest. Divers of this level tend to consult their own prior experience as well as their particular dive interests and begin to have only a few locations that meet their expectations.

The next stage in this model is categorized into family versus non family. Whereas the diver uses specific sources based on their experience level, the next layer of decision making has to do with a family or non-family member analyzing the spatial distance and convenience of flights as well as the financial resources it takes to get there as shown in part 2 of the model. As mentioned in the literature review, spatial or distance as well as price has a negative effect on location choice in most cases, unless the motivating factor makes the distance or price worth it in the traveler's mind. Actual distance does not matter as much as temporal distance so while flights cover more space in less time, some remote locations do not offer many flights, and or direct flights which can make the trip time consuming and tedious. Therefore, accessibility plays a large role when looking at the mode of transportation used to connect the traveler from one space to another. The amount of connections you have, what/how many airlines service the destination, and what hub you have to fly out of all affect destination choice. The further the destination, the more important it is to have either a direct flight or minimal connections, a hub to fly out of that is close to your place of residence, and a variety of airlines to choose from. The larger variety of airlines you have to choose from usually equates to more competition meaning lower prices. Whether the diver typically dives with his/her family, or by him/herself both impact financial and spatial decision making when choosing a destination. However, if the diver is making decisions for a

family, that impact is greater. This model suggests that most families will be more motivated to seek more convenient, cheaper flights as well as cheaper resorts with a larger variety of available activities.

The final stage of this model shows the importance tourists put on the amenities they wish to get out of their trip or their needs / expectations. Once the diver has consulted information resources, and has looked into flight information such as cost and convenience, he/she begins to narrow down choices to select a specific resort based on his/her needs and expectations. Since we are talking about scuba divers, this will include the resort amenities as well as the value of the dive experience, the climate, and environmental factors. Hotel/resort amenities (staff, food, room quality, available activities etc.) play an important motivating role as well. The quality of the dive operation as a whole (dive shop, dive staff, accessibility of dive sites, professionalism, dive site difficulty level, etc.) as well as environmental factors (variety of sea life available, amount of sea life, climate conditions, etc.) are a huge part of the dive experience. When asked whether guests would continue diving in Roatan if the condition of the reef declined, the majority responded that they would not.

The literature shows that the selection of a certain vacation destination type implies a desire for some kind of benefit. Therefore the motivations in steps one through three provide a hierarchy of roles in destination choice as tourists seek to find good deals and abundant value through a destination that provides amusement in diving, the broadening of their cultural knowledge, the discovering of new places and searching for tranquility etc.

Where Roatan Fits into the Hierarchy of Caribbean Diving Destinations

As far as where Roatan fits in the hierarchy of Caribbean destination choices, it can be hit or miss, but this Caribbean island off the coast of Honduras is gaining popularity quickly. According to the 2012 Reader's Choice Award through the largest Scuba Diving website, Scubadiving.com, the Bay Islands of which Roatan is a part, obtained the number five spot over all. This survey was then broken down into categories. Roatan remained in the top five in the categories: Best Wall Diving, Where to dive for the best and most colorful Coral & Sponges, The best diving for larger animals, and the best shore diving. This is impressive as five years ago they weren't even in the top 10 for any category. This is good for beginning divers who look to these popular dive websites and magazines to choose a destination. On the other hand, some websites don't even include Roatan as an option of a Caribbean dive destination. Therefore, it would be wise for Roatan Resort managers to get Roatan's name out to more popular scuba diving websites and magazines. This will resonate with diver's who are in the first phase of the model where they are relying on published articles and or entertaining, informational reading as sources to learn about Caribbean destinations.

In addition to being acclaimed the most as highly ranked dive destinations in top dive magazines and websites, The Bahamas, Belize, Bonaire, Cozumel, and the Cayman Islands also had the most popularity among those surveyed. The results showed that these are the destinations that the most people have been to, that divers return to the most, or that divers have on their bucket list as the top places they want to go to. All of these places have had Marine Parks installed which has been crucial to the protection of the reefs. In turn, these Marine Parks have allowed for the reefs in these destinations to

contain a variety and abundance of marine life as well as healthy and colorful coral. This is a key deciding factor in diver's destination decisions and should be a top priority of Roatan. Encouraging dive magazines and websites as well as dive shops to come to Roatan and dive the reefs to be able to rate Roatan's diving is a good step. Anthony's Key Resort already does this by offering retailers discounted stays to take in the resort experiences themselves. Other resorts should follow this lead.

A suggestion to address customer satisfaction would be for Roatan Resorts to market itself as an affordable, great place to get away for some spectacular diving and maybe even retirement. Many people would be enticed knowing that there are not yet crowds bidding up the price, although that may change soon. In 2011, Islands Magazine named Roatan the number one island in the world to retire to and Kiplinger.com listed it as among "8 great places to retire abroad".

This research puts Roatan between stages 3 and 4 in Miossec's diffusion model. The literature has shown that as the character of regions begins to alter, some tourists may seek other, less developed regions. As the model indicates, for intermediate divers, the need to see the unseen and know the unknown drives people to travel to new places and motivates them to visit new destinations (Vankatesh, 2006). Right now the number of visitors in Roatan is not much of an issue. Developing the infrastructure fast enough to match the need of the growing number of tourists to the island, however, is challenging. As more and more cruise docks open on the island, a continuing trend over the past decade, the islands have experienced large groups in the thousands crowding the beaches, shopping areas. Overcrowding is something the island should seek to

avoid. As stated in the interviews from the resort professionals who live on the island, it is important to find a balance between increasing the number of tourists and or profits of businesses on the island and the ability for the tourists to: (i) not feel crowded and enjoy a sense of seclusion; (ii) avoid the human consumption of an island's already fragile natural resources and; (iii) not overload the island's infrastructure capacity.

When asked which destination the diver has returned to most often and why, one respondent from the survey explained "Roatan is my current favorite. I have migrated over the years to avoid the "condo" crowd. As a location becomes popular I tend to feel crowded by people who do not necessarily share the love of the reef and respect for the [local's] lifestyle. This increase in casual divers tends to lead to less enjoyable dives both because of the company and the stress on the reef. Roatan has so far managed to avoid this…" (survey respondent, 2013).

Significance of Results and Recommendations

The larger significance of these results is to provide guidelines for operational management decisions for tourism operators who are facing an increasingly uncertain future as their tourism asset, nature, becomes degraded. This study's managerial implications for the sustainable management of visitor satisfaction in reef destinations may be summarized as follows. First, there is a high level of complexity surrounding the influence of reef tourism attributes on customer satisfaction. By providing tourism operators with empirical evidence of the links between high quality natural attributes (in this case, healthy coral and good biodiversity) and tourist satisfaction, reef tourism operators are encouraged to add their support to the conservation measures proposed

by natural resource managers and advocate for greater protection of the Mesoamerican Reef System. This is an issue that must be addressed through a coordinated effort between scientists, managers and industry (Bohnet, 2010).

In a study of reef attributes and scuba diver behavior conducted by Bohnet (2010), marine environmental quality, measured as percent live coral cover, was shown to be a significant predictor of dive site visitation. The study used a regression analysis to show that the reef quality is an economic "good"; while transit time from the resort to the dive site is an economic bad. Both the surveys and interview conducted in this study confirms this previous research. Therefore, one of the most important steps a dive resort can take to maintain or increase tourist volume is to protect the very features that attract their customers – the reefs themselves. This includes supporting dive staff that is educated on best practice measures, supporting local Marine Parks and pushing for accountability in the management of them if one already exists nearby, and vying to get one set up if there is not one. Marine Parks when operated and managed properly can help to combat invasive species such as the lionfish and many others that affect food chains and the interconnected life cycles of terrestrial and aquatic ecosystems that use the reefs. When the reefs are healthy, they not only harbor more of a variety of marine life, they have more marine life in general and they also look more aesthetically pleasing to the divers with more vibrant colors and less coral bleaching. This is important because one of the biggest drivers of divers to certain locations is the variety and abundance of marine life and more and more now a days, people depend on word of mouth recommendations when it comes to this as opposed pictures on

websites since they don't always match their experiences and can have been taken at any time.

In order to address reef destruction, Marine Park should implement management interventions, such as controlling access to dive sites so that certain sites are maintained with the lower impacts and higher levels of marine wildlife demanded by more specialist divers. If the dive sites that are the greatest attractions for the divers are to maintain their reputation as world-class dive sites, then it is important to limit the impacts to them. A successful way that some Marine Parks have done this is to forbid access for day trip boats because these are dominated by novice divers whose needs can be met elsewhere and who tend to do the most damage to the reef. This will help to protect the reef from that damage. It is poor resource allocation to allow the users with the lowest requirements to consume the resource with the highest quality. Another suggestions to lessen damage to the reef is to have dive training confined to resilient sites with sandy substrates rather than reefs as research has shown that exceptionally high rates of damage to coral occurs at dive sites used mainly for training.

In addition to the health of the reef, those surveyed along with those interviewed suggest a variety of other attributes that are important to location choices. These include clear water, warm temperatures, weather and climate. Although climate and weather conditions aren't controllable by resorts they should be cognizant of them when advertising. Given the importance of weather, both as a dissatisfier and its influence tourists' ability to see marine life, additional management measures may be considered to manage poor weather days. One approach, adopted by the whale shark

sighting industry in Western Australia, may be to advertise discounted subsequent trips to visitors who had been particularly badly affected by poor weather.

The size of the dive group, the price of the dive, and the variety of experiences on offer, staff and infrastructure were also factors that influenced customer satisfaction. The concept of customer satisfaction has been the focus of a number of studies both in national parks and other nature-based settings and in tourism more generally. This interest arises out of the intuitive logic that there should be a causal link between quality of a tourism supplier's service, satisfaction and the tourism supplier's success through positive word of mouth and repeat visitation (Bohnet, 2010).

Marketing

Another suggestion to Dive Resort managers would be to advertise to local dive shops in a variety of U.S. cities. For example, Denver, Colorado has the most certified divers per capita in the U.S. Resorts could create discounted packages for dive shops that get a certain number of divers to come as an incentive for dive shops to go to certain locations. They could also create deals for dive shop employees to come at a discounted rate, as the instructors and divemasters from local dive shops prefer to experience a destination first hand before they recommend it to others. As both the survey and interviews showed, many divers in certain stages of destination decision making process, go with what is offered by their local shop for four main reasons. These are: (i) They trust their professional opinion (they have been to many places, know the reefs and the resorts), (ii) they book everything for you from the flight to the stay, so it is less of a hassle for you, (iii) It is usually cheaper because they can get discounts and

group rates for airfare etc., and (iv) going with a local dive shop allows them to go with a group of people to add to the social experience, helps with getting around especially if they don't know the language, adds to their safety, and adds more expertise on the trip.

Social media is another recommended venue for advertisement. Offering deals for a winner from a lottery of people who "like" the resorts page allows for quick sharing of a visual picture and information to entice people to the resort that spreads like wildfire on social media sites and hits a variety of demographics. The surveys and interviews also pointed to the importance of having activities available at the resort so that family members, friends and or non-divers have something to do while you are diving so advertising what a resort has in this area is a good idea. If a resort is lacking in this area it is recommended that they invest in activities that would be family oriented and enjoyable. In addition to family activities, tourists are looking for an educational experience. It was evident through the surveys and interviews that the prestige of being able to talk about something you learned in another country is highly sought. It is recommended that resorts provide an educational/cultural element to the guests' stay. For example, AKR includes a historical/cultural museum free to guests to learn about the history of the island. In addition to this, AKR provides a Fish Identification slide show where guests can go to learn about the different aquatic species they will see on the reef as well as how best to avoid damaging them and how crucial and intertwined they are to a variety of both aquatic and terrestrial ecosystems.

Overall the key to doing well for the resort is to provide good memorable experiences to their guests. This will reap benefits as it affects every part of their trip

from their meals to their dives. Ultimately, word of mouth is an extremely powerful form of advertisement in this sector. One can look at Anthony's Key as a model of how to do things right. It is evident that the owner, Galindo, pays attention to detail. The resort participates in and supports the local Marine park, the dive operation is seamless and includes knowledgeable, friendly personnel. There is a clinic on site, the meals are of good quantity, quality and variety, and they have many activities to chose from, some of which are unique to the island and some of which are revered by children. In addition, the resort staff is helpful, friendly, English-speaking, and has been around (their employee turnover rate is very low). After analyzing the results of this survey and collecting data in person, it is evident that AKR can be used as a model for resort management. One interviewee stated that they were on a cruise that stopped in Roatan and went out on a dive through AKR. They did such an amazing job, the diver and his wife decided then and there that they wanted to come back to stay at AKR and since then has come to Roatan and stayed at AKR five times. As mentioned in Chapter five, repeat customers are important for AKR.

The survey results provide further proof of the success of Anthony's Key Resort. Their cliental includes a large number of repeat visitors. The majority of their guests choose AKR based on word of mouth recommendations as well as the use of online sources including the Resort website and social media. Anthony's Key Resort can be used as a model resort for those wishing to gain more cliental as well as prestige. It is evident that the owner and his employees are dedicated to supplying an experience that entices divers and captures their curiosity. They have not left anything out of the

picture; from their museum that provides cultural awareness and furthers their guests' knowledge base; to a variety of activities that are available to the whole family; a seamless dive operation with knowledgeable, professional, friendly staff; satisfying food; and comfortable serene accommodations, AKR has managed to provide memorable experiences to their guests. Their commitment to diver safety and reef ecology allow for the best possible dive experience. The guests then provide a return service in addition to their monetary exchange, their word of mouth recommendations are some of the most powerful forms of advertising for the resort (not to mention free).

Based on the surveys and interviews, some suggestions to AKR would be to find an environmentally friendly solution to the no-see-ums. Unfortunately for those who have severe reactions to their bites, this is a major deterrent. Another suggestion would be to have an option for disabled divers. Some local dive shops do a disabled dive every year and it would be nice to have Roatan as an option for that. Another suggestion would be to continue to invest in the newly founded part of Anthony's Key's dive operation on Maya Key. This provides a new experience for repeat guests as well as an added incentive for new ones.

Further Studies

Environmental factors are not usually something tourism operators can control, however, they can have an impact on them. Efforts to conserve and enhance biodiversity are important as well as providing opportunities for guests to learn about the environmental surroundings may help to quench the thirst of looking for knowledge that many tourists have enhancing their experience and satisfaction. It is important to

find ways to improve customer satisfaction at resorts, while taking into account the environmental pressures facing the Mesoamerican Barrier Reef. As a nature-based tourist attraction, scuba diving in reefs is considered to be heavily reliant on their environmental condition as survey respondents and interviewees alike attested to the importance of the quality of the reef and the diversity of sea life in their decision making of where to go. Researchers have found this as well. Because the reefs that support these activities are under increasing pressure from human activities such as tourism, over-fishing, coastal development, sewerage discharge, deforestation and farming, it is important to consider environmental impacts of all actions a resort has so as to offset these devastations and protect the quality of the reef. (e.g. Mora, 2008). Thus supporting the Marine Parks is crucial, and ensuring that these are managed properly is key to continued tourism.

In the future, these pressures are predicted to increase due to coral reef ecosystems' vulnerability to the effects of climate change, particularly rising sea temperatures and ocean acidification (Hoegh-Guldberg, 2007). If coral communities cannot recover fast enough, coral ecosystems are likely to be impoverished and potentially less aesthetically-pleasing to tourists who visit them. Based on scientific reports of reef degradation, the reef tourism industry should also be concerned that actual and perceived ecological degradation of coral reefs are likely to affect tourist numbers and the associated economic sectors that rely on healthy reefs for their income (Hoegh-Guldberg, 2007).

As noted earlier the future of the dive market is uncertain. In addition to the stated suggestions for dive resort managers that deal with resort amenities and dive operations, it is extremely important that stakeholders take action now to protect the natural resource that brings in these tourists. The key area to gain sustainability is education and information. Schools and younger generations is a good place to start as these people are a crucial part of the future to Roatan, but it is important to provide information to all stakeholder groups, and especially the tourists. Although the Mesoamerican Reef is almost half the size of the largest, the Great Barrier Reef, its advantage for divers is in its proximity to land and the intimacy of its connection with inshore habitats such as mangrove, sea grass, and coral reef. These systems are bound so tightly together by currents, tides, and mutual need that it's not plausible to break them apart. John Muir told us what we can expect when humans with their habits begin to unravel a sound ecosystem, when writing, "When we try to pick out anything by itself, we find it hitched to everything else in the universe" (Brower, 2012: 93).

Future research should be done on the effectiveness of different managerial practices in marine parks. This will be increasingly important as the ocean becomes more acidic and climate change alters the amount of sunlight and warmth in the Caribbean area. Scientists should also continue studying the threshold of coral reefs to different climatic pressures as well as human induced pressures from sedimentation, erosion, pollution etc.

A lot of research has been done to lay the ground work for understanding where divers go in the Caribbean and how they make those decisions. Further studies should

be conducted at a variety of dive shops across the country to test the model that was developed here. Future studies should target a diverse group of divers going to different Caribbean dive destinations especially beginners to advanced, single divers and family divers. Studies should look at the role that dive shops play in the decision making process and what type of diver they affect the destination decision of more.

Finally, even though the results and findings of this study are somewhat exploratory in nature, it is expected that the information produced and the implications of the study may be of help to tourism planners, policy-makers, and marketers to build more competitive tourism destination environments. This research shows that it is in the best interest of the dive industry in most heavily-visited Caribbean dive destinations to provide a diverse range of diving opportunities. The advantage of this is that the specialized market is a higher yielding market as specialized divers stay for longer and spend more time; therefore, it makes economic sense to target this market. This is also the market that sets the reputation and standards for diving (Dearden, P., Bennett, M. and Rollins, R., 2007). Not many novice divers write magazine articles, or tell other members of their dive club about their experience. As this study has shown, word of mouth is a powerful marketing tool and should therefore be managed carefully. Another advantage of specialized divers is that they usually have less impact on the environment than novice divers.

In the absence of effective management interventions, diving can be destructive to reefs; however, diving actually has tremendous potential to aid in reef conservation. The sport of scuba diving can provide a direct monetary incentive to protect species and

their habitat. By monitoring the specialization levels among divers, one can receive an early warning system for management interventions which can also help address the lack of equipment and detailed knowledge required for biological monitoring (Dearden, P., Bennett, M. and Rollins, R., 2007). Understanding the social science dimensions of the dive experience will ultimately lead to a more successful and sustainable dive industry.

APPENDICES

A: Links to Surveys

Anthony's Key Resort Dive Survey:
https://docs.google.com/forms/d/1e3DWSNizZgacV7jAeq4vgDny_14EZa9W5mQ3EJgYlt4/viewform

Local dive shop survey:
https://docs.google.com/forms/d/1xDAdxoBWsY4OxXD3DJR3JyT6uGKUpLBMtvWlzX4dHog/prefill

B: Hard Copy Version of Surveys

Local Dive Shop Survey

SASS Survey

1. **Current age:**
   ___ 18 – 27 yrs ___ 28 – 37 yrs ___ 38 – 47 yrs ___ 48 – 57 yrs
   ___ 58 – 67 yrs ___ 68 – 77 yrs ___ 78 + yrs

2. **How old were you when you started diving?**
   ___ 10-17 yrs ___ 18 – 27 yrs ___ 28 – 37 yrs ____ 38 – 47 yrs ___ 48 – 57 yrs ___ 58 – 67 yrs ___ 68 – 77 yrs ___ 78 + yrs

3. **How many kids do you have in your household?**
   ___ none ___ 1 ___ 2 ___3 ___ 4
   ___ 5 +

4. **How did you hear about us?**
   ___ Walk in ___ Web ___ e-mail ___ Friend ___Yellow Pages ___direct mail

5. **Which of the following would most closely describe you :**
   ___Scuba Diver (please complete questions 6-24)
   ___ Snorkeler (please complete questions 25-30)
   ___Swimmer (please complete questions 31-34)
   ___Triathlete (please complete questions 35-39)

SCUBA DIVERS
Please check all that apply:

6. **Which of the following scuba classes are you interested in?**
   ___ not interested in any ___ Beginner Scuba Certification ___ Advance Cert.
   ___ Master Diver Certification ___ Nitrox Certification ___ Rescue Diver Cert.
   ___ Technical Diving ___ Dive Instructor ___ Underwater Photo.
   ___ Underwater Ecology ___ Drysuit Seminar/Certification

*If there any other classes not offered at Sub-Aquatic Sports that you would like to take, please list here:

7. **Which of the following dive opportunities are you interested in?**
___ Local weekly dives ___ Great Lake Shipwrecks ___ Caribbean trips
___ Exotic trips ___ None of these

Please check the most correct response:

8. **Do you own Scuba Gear** ___ Yes ___No
If yes, where did you buy the majority of the gear from?
___ Sub Aquatic Sports ___ Used market ___Other dive store ___ Internet ___ other

9. **What Agency were you certified by?**
___ NAUI ___ PADI ___ SSI
___other

10. **Where did you take your classes at?**
Dive Facility: City: State/ Province
Country:

11. **What was the primary reason for taking your class at this facility?**
___ Cost ___ Location ___ Reputation / Recommend by others
___ Convenient schedule

15. **How long have you been certified**? _____

16. **What is your highest certification level?** _____

17**. How many dives do you average per year?** _____ **How many total dives have you logged?** _____

18. **Please fill in the number of dives you have completed in each of the following:**
___ Local Lakes ___Quarries ___Great Lakes ___ Caribbean

19. **Where was your first dive in the Caribbean**? _____

When you travelled to the Caribbean, how did you book your trip?
___ Online (Which site? _____)
___ Dive Store (Where? Name? _____)
___ Travel Agent (Who? _____)

20. **What dive destination have you returned to most often, or would like to return to**? _____
Why?

21. **What dive destinations are on your 'bucket list'?** 1. _____ 2. _____

22. **Where was your worst dive experience and why?**

23. **What is the biggest obstacle for not diving more?**
___ cost
___ work schedule/family obligations
___ I don't like cold water diving
___ I am uncomfortable with diving, I don't feel proficient or safe
___ Other _____

24. **Have you ever joined us on the weekly Wednesday Night Dives in the summer**? ___ yes ___no

If yes, when was the last time you joined a Wednesday Night Dive?

___ Summer 2012 ___Summer 2011 ___ Summer 2010 ___ 4 + years ago.

What would you like to see changed about Wednesday Night Dives?

If no, why have you not joined a Wednesday Night Dive?

___ I don't like cold water diving
___ I don't know any divers or have a dive buddy
___ My schedule doesn't allow
___ I am not comfortable with my dive skills
___ I don't own gear
___ The cost

SNORKELERS

25. Where do you snorkel? _____ Local Lakes _____ Caribbean/Florida Vacations _____Other

26. Do you own snorkeling gear? _____ Yes _____ No

27. If yes, approximately how much did you spend on your gear?
___ less than $25 ___ $26-$50 ___ $51-$75 ___ $75-$100 ___ over $100

28. Would you be interested in a snorkeling class? _____ Yes ____ No

29. What is your greatest concern with snorkeling?

_____ Swimming skill _____ Sharks _____ Wave Conditions
_____None

30. How often each year do you go snorkeling.
____ Less than 5 times ____ 6-10 times ____ 11-20 times ____ 21 + times

SWIMMERS

31. Where do you swim at?
_____ Local YMCA/Health Facility _____ Local Lakes _____ Home Pool

32. How often do you swim?
_____ 2-5/week _____2-5/month _____ seasonally

33. When looking for a swim goggle, what is the most important feature?
_____ Comfort ____ Doesn't Leak _____ Streamline for competition

34. Do you use swim fins, kick boards, etc.
_____ No _____Yes, these are provided by the pool facility
_____ Yes, I own this item(s)

TRIATHLETES

35. **How many triathlons have you competed in?**
____ Training for my first _____ 1-5 _____More than 6

36**. Do you wear a wetsuit during training and/or racing?** _____ Yes _____No

If yes, how much did you pay for the wetsuit?
_____ Less than $100 _____$100-$200 _____$200-$300 ____ More than $300

38**. Do you belong to a local training club?** ____ Yes ____ No

39**. Where do you purchase a majority of your swim related race gear?**
_____ Small Local Retailer _____ Franchise Store _____ Internet

Thank you for filling out this questionnaire!!!!

Dive Resort Survey – Anthony's Key Resort

DIVE SURVEY

City: **State/Province:** **Country:**

Current age:

___ 18 – 27 yrs ___ 28 – 37 yrs ___ 38 – 47 yrs ___ 48 – 57 yrs
___ 58 – 67 yrs ___ 68 – 77 yrs ___ 78 + yrs

How old were you when you started diving?

___ 10-17 yrs ___ 18 – 27 yrs ___ 28 – 37 yrs ____ 38 – 47 yrs ___ 48 – 57 yrs ___ 58 – 67 yrs ___ 68 – 77 yrs ___ 78 + yrs

When did you go to Roatan (month/yr)? **How long did you stay there (days)?**

Who do you usually dive with?

___ Friends ___ family ___ co-workers ___ self
___ other

How many dives have you logged?

___ 1 - First diving trip ever

___ 2-10

___ 11-25

___ 26 - 50

___ 51 – 100

___ 101 – 150

___ More than 150

How many times have you been to Roatan?

What is the average number of dives you do each time you go to Roatan?

___ 0-2 times

___ 3-8 times

___ 9-12 times

___ 13 + times

What Agency were you certified by?

___ NAUI ___ PADI ___ SSI
___OTHER

What is your highest certification level?

___ Open Water Diver

___ Advanced Open Water Diver

___ Rescue Diver

___ Divemaster

___ EAN Nitrox

___ Master Scuba Diver

___ Other (please specify) _____

Was this training received at a local dive shop? ___ Y / ___ N

Did you get certified at a resort you visited ___ Y / ___ N

What is the biggest obstacle for not diving more?

___ cost ___ work schedule/family obligations ___ I don't like cold water diving

___ I am uncomfortable with diving, I don't feel proficient or safe ___ Other _____

Please circle <u>ALL</u> of the places you have been diving in the Caribbean and then <u>NUMBER THEM</u> in the order that you visited them on the lines provided.

___ Grand Cayman Island	___ Roatan- Honduras	___ Turks & Caicos
___ Bahamas	___ Little Cayman / Cayman Brac	___ Cozumel
___ British Virgin Islands	___ Bonaire	___ Key Largo, Florida
___ U.S. Virgin Islands	___ Playa del Carmen	___ St. Lucia
___ Saba	___ Caribbean Cruise	___ Dominica
___ Puerto Rico	___ Virginia Gorda (B.V.I)	___ St. Croix
___ Other _____	___ Other _____	___ Other _____

Did air flight cost affect your choice of going to Roatan? ___ YES ___ SOMEWHAT ___ NO

What dive destination have you returned to most often, or would like to return to?

_____

Why?

What future Caribbean dive destinations are on the top of your 'bucket list'?

1. _____ 2. _____ 3. _____

Why? 1. _____ 2. _____ 3. _____

Where was your worst dive experience and why?

On a scale of 1 – 5 rate the following by circling the most appropriate number:

	Extremely Un - satisfied	Un – satisfied	Neutral	Satisfied	Extremely Un-satisfied
Roatan's sanitation system (drinking water quality, waste system etc.)	1	2	3	4	5
The cleanliness of Roatan's beaches	1	2	3	4	5
Available activities for families	1	2	3	4	5
Dive prices on Roatan	1	2	3	4	5
Hotel/resort prices on Roatan	1	2	3	4	5
The ability to communicate in your native language on the Island	1	2	3	4	5
The level of professionalism of dive operators in Roatan	1	2	3	4	5
Accessibility of diving on Roatan	1	2	3	4	5
Control of insects on Roatan	1	2	3	4	5
Food quality at Anthony's Key Resort	1	2	3	4	5
Food variety at Anthony's Key Resort	1	2	3	4	5
Bar service at Anthony's Key Resort	1	2	3	4	5
Ground maintenance at Anthony's Key Resort	1	2	3	4	5
The condition of the Reefs at Roatan.	1	2	3	4	5

Rate the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I plan to return to Roatan to dive.	1	2	3	4	5
I plan to return to Anthony's Key Resort to stay when I return to Roatan.	1	2	3	4	5

Anthony's Key Resort was a good value for the price.	1	2	3	4	5
Anthony's Key Resort 's Concierge was helpful.	1	2	3	4	5

Did you eat at a restaurant off site while staying at Infinity Bay? ___ YES ___ NO

If yes, then which one(s)?

What features of Roatan make you want to return?

What features of Anthony's Key Resort make you want to return?

Which activities that Anthony's Key Resort provides for its guests did you participate in (select all that apply).

___ Jetsking ___ Parasailing ___ Island Tours ___ Sail to Cayos Cochinos

___ Sailboat charter ___ Golf ___ Horseback riding ___ Whale shark expedition

___ Canopy Zip lines ___ Fishing ___ Dolphin dive ___ Dolphin Encounter

___ Glass bottom boats ___ other _____

What additional activities would you most likely participate in if offered at Anthony's Key Resort?

Are you aware of actions you can do to protect the reefs from deterioration? If so please free write in this space about what actions you are aware to do so.

C: Interviews

Key Informant #1: Educator, Jennifer

Key Informant #2: Biologist, Teri

Key Informant #3: Divemaster, John

Key Informant # 4: Marketing Director, Claudia

Other: Divers at Resort

Interview: Anthony's Key – Guest

1. **What Country are you from?**
2. **How many vacation days to you have per year?**
3. **Where were your first two dives in the Caribbean?**
4. **Where else in the Caribbean have you been diving before?**

5. **What factors did you consider when choosing Roatan to dive? (check all that apply)**
   - ☐ Number/type of fish
   - ☐ Price of diving
   - ☐ Diversity of diving sites
   - ☐ The coral coverage
   - ☐ Variety of coral
   - ☐ Recommendation from someone _____.
   - ☐ Others (please specify)

6. **Do you own your own scuba gear?** _____ yes _____ no

7. **If the price of diving/courses increased on Roatan would you still come?**
   - ☐ Yes
   - ☐ No
   - ☐ Don't Know

Please comment:

8. **What do you think about the condition (health) of the reef?**
   - ☐ Good
   - ☐ Reasonable
   - ☐ Poor
   - ☐ Don't Know

9. **If the condition of the reef deteriorated would you come back to Roatan to dive, if prices remained the same?**
   - ☐ Yes
   - ☐ No
   - ☐ Don't Know

   Please comment:

10. **How many times have you been to this Island?**
    Resort?
    a. What are the most noticeable changes between the last time you came and now?

    b. What has triggered these changes?

    c. How do you see these changes affecting Roatan into the future?

11. **What made you choose to stay at Anthony's Key Resort**?
    - ☐ ease of diving (location)
    - ☐ wanted to learn how to dive
    - ☐ dolphin encounter
    - ☐ return visit
    - ☐ recommendation by another _____
    - ☐ Other _____

12. **Which factor was most important?**

13. **How did you book your stay at AKR?**
    - ☐ Online
    - ☐ Travel Agent
    - ☐ Dive Store

- ☐ Other: _____

14. How did you hear about Anthony's Key?

- ☐ Walk-in
- ☐ Web – What site(s)?_____
- ☐ e-mail
- ☐ friend
- ☐ yellow pages
- ☐ direct mail
- ☐ other _____

15. What did you use as a source of information before committing to the trip?

- ☐ The resort media website
- ☐ Social media
- ☐ Other (explain)_____

16. What airlines did you use to travel to Roatan? Why?

17. Suggestions for Anthony's Key for a more enjoyable stay?

18. Suggestions for Anthony's Key for a more enjoyable dive?

19. In your opinion, how does Roatan compare to other Caribbean diving locations?

Spanish Version

Preguntas del Entrevista

1. ¿De qué país es Ud.?

2. ¿Cuántos días de vacaciones tiene cada año?

3. ¿Dónde fueron sus dos primeros buceos en el Caribe?

4. ¿Dónde más en el Caribe he buceado?

5. ¿Cuáles factores consideró cuando escogiendo Roatán para bucear? (marque todo que aplique)

- □ Número/ tipo de pez
- □ Precio de bucear
- □ Diversidad de los sitios de bucear
- □ El cubierto del coral
- □ La variedad del coral
- □ Recomendación del alguien _____.
- □ Otros (por favor sea específica)

6. ¿Tiene su propio equipo de buceo? _____ Sí _____ no

7. Si el precio de bucear / cursos aumentaron en Roatán, ¿viniera todavía?

- □ Sí
- □ No
- □ No sé

Comentarios:

8. ¿Qué piensa de la condición (la salud) del arrecife de coral?

- □ Bueno
- □ Razonable
- □ Pobre
- □ No sé

9. Si la condición del arrecife de coral se deterioró, **¿**regresaba a Roatan para bucear, si los precios fueron los mismos?

- Si
- No
- No sé

Comentarios:

10. ¿Cuántos tiempos he sido a Roatan? AKR?

    d. ¿Cuáles son los cambios más notable entre la ultima tiempo vino y ahora?

    e. ¿Qué he causado estos cambios?

    f. ¿Cómo ve estos cambios afectando Roatan en el futuro?

11. Por qué se quedó a Anthony's Key Resort?

- La facilidad de bucear (ubicación)
- Aprender como bucear
- Encuentro inesperado del delfines
- Visita de regreso
- Recomendación de otro persona _____
- Otro _____

12. ¿Cuál factor fue más importante? (puede poner un círculo en su respuesta arriba)

13. ¿Cómo reservó su estancia a AKR?

- En-línea
- Agencia de viajes
- Tienda de bucear
- Otro: _____

14. ¿Cómo se enteró de Anthony's Key?

- Visita al lugar
- El internet – Cuál(es) sitio(s)?_____
- Correo electrónico
- Amigo
- El libro de teléfono (páginas amarillas)
- El correo directo

- Otro _____

15. ¿Qué usó como un fuente de información antes de comprometiéndose al viaje?
    - El sitio del Anthony's Key en el internet
    - El medio de comunicación sociable (Facebook, Twitter, etc.)
    - Otro (explique)_____

16. ¿Cuál aerolínea usó para viajar a Roatan? ¿Por qué?

17. ¿Sugestiones para Anthony's Key para una estancia más agradable?

18. ¿Sugestiones para Anthony's Key / Roatan para un buceo más agradable?

18. En su opinión, ¿cómo compara Roatan a otras ubicaciones de bucear en el Caribe

INFRFOMED CONSENT

Western Michigan University

Geography

Principal Investigator: Dr. Dave Lemberg
Student Investigator: Juli Tripicchio
Title of Study: Thesis

You have been invited to participate in a research project titled "ROATAN, HONDURAS AND PERCEPTIONS OF DIVER'S LOCATION CHOICES IN THE CARIBBEAN." This project will serve as Juli Tripicchio's thesis for the requirements of the Master of Arts in Geography. This consent document will explain the purpose of this research project and will go over all of the time commitments, the procedures used in the study, and the risks and benefits of participating in this research project. Please read this consent form carefully and completely and please ask any questions if you need more clarification.

What are we trying to find out in this study?
The purpose of this study is to determine the hierarchy of places that divers go in the Caribbean, to identify where Roatan, Honduras fits into this hierarchy, and to determine strategies to increase the volume of dive tourists to Roatan.

Who can participate in this study?
Anyone of age 18 or older who has logged at least one dive in Roatan, Honduras.

Where will this study take place?
Roatan, Honduras

What is the time commitment for participating in this study?
The overall time it will take a participant to complete this interview from beginning to end should be around 15 – 20 minutes.

What will you be asked to do if you choose to participate in this study?
In order to participate in this study you will be required to answer a serious of questions in an interview about your dive practices.

What information is being measured during the study?
The information that may be collected from you will be about your dive and dive resort experiences in the Caribbean. Your responses will be completely anonymous.

What are the risks of participating in this study and how will these risks be minimized?

There are no known risks that may incur as a result of participation in this study.

What are the benefits of participating in this study?
This study **may** provide resorts in Roatan, Honduras along with other Caribbean dive destinations, with spatial data to incorporate into their own planning and marketing processes so they can better accommodate dive customers and their families. As tourism operators learn more about their consumers, they may be better able to provide more desirable and quality experiences for them. This in turn may indirectly benefit participants of this survey, as they continue in this increasingly popular activity.

Are there any costs associated with participating in this study?
There is no cost to you for participating in this interview other than the limited time that it will take to complete the questionnaire.

Is there any compensation for participating in this study?
There is no monetary compensation for completing this study.

Who will have access to the information collected during this study?
Only myself (Juli Tripicchio) as well as my research advisor (Dr. Dave Lemberg) will have access to the information collected. The results of the study are to be presented at a conference; however, participant's identities will be kept confidential. No names will be collected in the survey, nor will they be used. This will ensure the protection of individuals completing the survey.

What if you want to stop participating in this study?
You can choose to stop participating in the study at anytime for any reason. You will not suffer any prejudice or penalty by your decision to stop your participation. You will experience NO consequences either academically or personally if you choose to withdraw from this study.

The investigator can also decide to stop your participation in the study without your consent

Should you have any questions prior to or during the study, you can contact the primary investigator, Juli Tripicchio at 269-377-9736 or juli.d.tripicchio@wmich.edu You may also contact the Chair, Human Subjects Institutional Review Board at 269-387-8293 or the Vice President for Research at 269-387-8298 if questions arise during the course of the study.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.

I have read this informed consent document. The risks and benefits have been explained to me. I agree to take part in this study.

Please Print Your Name

_____ _____

Participant's signature Date

D: HSIRB Approval Letter

Date: June 3, 2013

To: Dave Lemberg, Principal Investigator

Juli Tripicchio, Student Investigator for thesis

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 13-05-10

This letter will serve as confirmation that your research project titled "Perceptions of Diver's Location Choices in the Caribbean" has been **approved** under the **exempt** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved.

You must seek specific board approval for any changes in this project (e.g., ***you must request a post approval change to enroll subjects beyond the number stated in your application under "Number of subjects you want to complete the study***)." Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

The Board wishes you success in the pursuit of your research goals.

E: Pictures of Roatan

Aerial of West Bay Beach – Photo taken by: Angela Stockman

Punta Gorda – Photo taken by: Angela Stockman

Man sailing with a palm branch – Photo taken by: Angela Stockman

Half Moon Bay Beach – Photo taken by: Angela Stockman

Cruise Ship day on West Bay Beach – Photo taken by: Angela Stockman

Half Moon Bay from water taxi in West End – Photo taken by: Angela Stockman

Iron Shore of West Bay – Photo taken by: Angela Stockman

West Bay Beach – Photo taken by author

F: Pictures of Anthony's Key Resort

View of Anthony's Key from water taxi dock - Photo taken by author

Foliage on Anthony's Key- Photo taken by author

Cabanas over water on Anthony's Key- Photo taken by author

View of ocean from restaurant- Photo taken by author

Garifuna dancers for Island Fiesta Night on Anthony's Key - Photo taken by author

Fragopini Bar - Photo taken by author

Main Reception Lodge - Photo taken by author

Roatan (newly remodeled) Airport - Photo taken by author

Poolside lounge - Photo taken by author

Pool - Photo taken by author

Bailey Key - Photo taken by author

Day dive – Photo taken by Anthony's Key Resort

Dive Boat between dives - Photo taken by author

Dive shops and docks – Photo taken by Anthony's Key Resort

Dolphins from Anthony's Key Dolphin Encounter Program- Photo taken by author

Dolphin Show - Photo taken by author

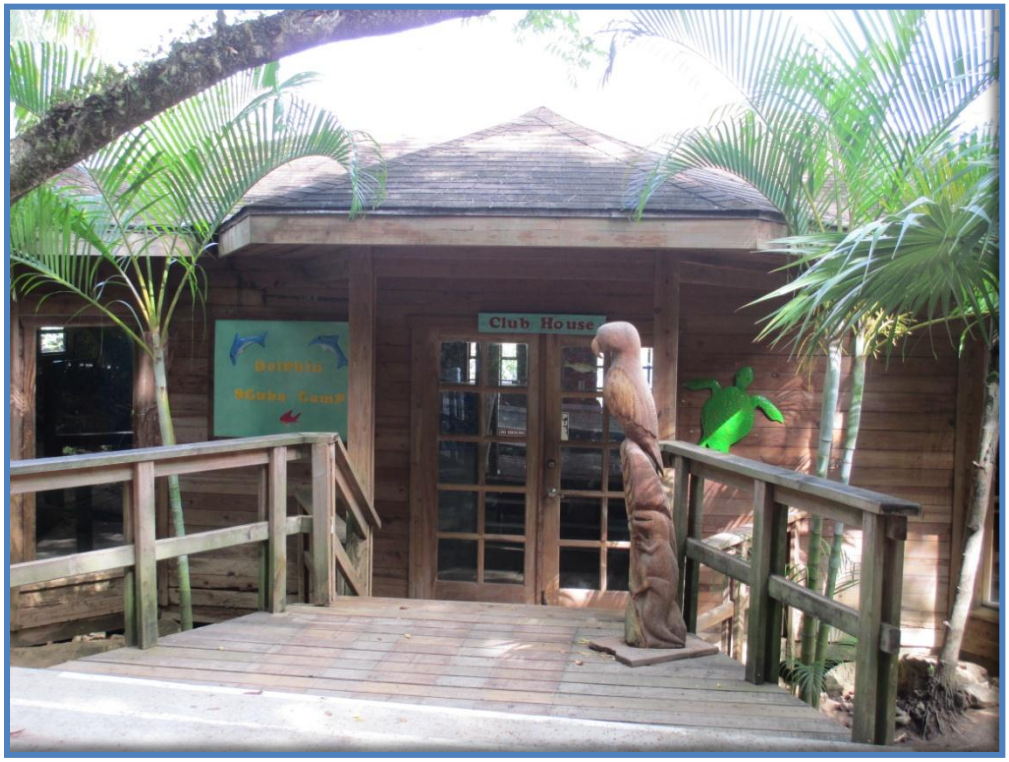
Dolphin Encounter with researcher

Anthony's Key – Photo taken by Anthony's Key Resort

Kayaks available for guests - Photo taken by author

Roatan Institute for Marine Science - Photo taken by author

Club House / Dolphin Scuba Camp - Photo taken by author



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VITA

Juli Tripicchio was born to explore. She was born in Petoskey, Michigan and raised in Charlevoix, Michigan surrounded by water. She spent her summers in the Upper Peninsula of Michigan at her family's cottage where there was no shortage of places to discover. She realized her passion for travel in High School when taking a study abroad trip to Spain. After finishing a Bachelors degree at Western Michigan University in Education, she began her career as a High School Spanish and Environmental Science teacher (her major and minor respectively). With a desire to inspire others to travel the world she has taken high school students on study abroad trips to Costa Rica, Spain and Italy. Realizing that she wanted to know more about the world, she pursued her Master's degree in Geography and Western Michigan University. During this she began a whole new adventure when she and her husband began a family. She adores her 3 year old and 18 month old and is constantly looking for opportunities to instill a sense of discovery in the wonders of this world in them as well.