

Challenges and Potentials of Ecotourism as a form of Conservation and Sustainable Development on Zapatera Island, Nicaragua

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Abstract

Unsustainable natural resource management practices are an increasing problem on Zapatera Island, Nicaragua. As overfishing and deforestation continues to degrade the environment, some community members are looking towards ecotourism as a sustainable alternative. Using grounded theory research methods, this thesis examines the ways in which existing ecotourism has impacted the surrounding community and the feasibility of future ecotourism developments as a natural resource management method to promote environmental conservation and sustainable development. Research was done through semi-structured interviews with ecotourism business owners, ecotourism employees, community members not employed in ecotourism, tourists and a representative from Nicaragua's environmental management agency in addition to information gained from secondary sources and previous ecotourism research. This study explores the ways in which Zapatera Island can benefit from ecotourism development and how to overcome the possible obstacles that can act as a barrier to these benefits.

Keywords: Zapatera Island, Nicaragua, Ecotourism, Natural Resource Management, Sustainable Development

Dedication

There are a handful of people without whom I never would have completed this thesis. I am eternally grateful.

To my family, who never doubted me when I decided to drop everything and move to Europe and who I know always have my back, regardless of which adventure I chose next.

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Abbreviations

| | |
|--------|------------------------------------------------|
| CBET | Community-Based Ecotourism |
| CBM | Community-Based Monitoring |
| FSLN | Sandinista National Liberation Front |
| INTUR | Nicaragua Institute of Tourism |
| IUCN | International Union for Conservation of Nature |
| MARENA | Ministry of Natural Resources and Environment |
| NGO | Non-governmental organization |
| SINAP | National System of Protected Areas |
| UNEP | United Nations Environment Programme |
| UNWTO | United Nations World Tourism Organization |

1 Introduction and Objectives

Unsustainable natural resource management practices are an increasing problem on Zapatera Island, Nicaragua. As overfishing and deforestation continues to degrade the environment, some community members are looking towards ecotourism as a sustainable livelihood alternative. The Nicaraguan Ministry of Natural Resources and Environment also designates ecotourism as a legal form of income generation on Zapatera Island. Despite some support for ecotourism on Zapatera Island, there is a lack of existing research on how Zapatera Island communities view possible ecotourism development, what the possible benefits of ecotourism development on the island are, and what needs to be done to overcome obstacles and ensure these benefits are captured. This study aims to fill this gap in existing research. Through this research a well-rounded picture of the current ecotourism impact on Zapatera Island as well as the possible future direction and impacts of additional ecotourism development can be identified.

1.1 Problem Statement

Zapatera Island is currently being degraded by extractive activities such as logging, overfishing, illegal hunting and cattle ranching. Residents of Zapatera Island are faced with poverty and land use and ownership conflict. Without an alternative livelihood practice it is unlikely these extractive activities will end.

Ecotourism is one of the two legal income activities on the island, the other being regulated fishing (Arévalo, 2010). During Alex R. Arévalo Vásquez's 2010 field work and participative workshop on the island the development of ecotourism was given as a possible way to improve the resource management situation on the island by the workshop participants, including community leaders, NGO representatives, large land owners and MARENA officials (Arévalo, 2010). This was not the first time the idea of ecotourism reached the island, as there are already two lodges and one camping site for tourists located on Zapatera Island.

Ecotourism is a growing sector in Nicaragua and globally (Ntibanyurwa, 2006; Das and Chatterjee, 2015b; World Bank, 2016). While there are many studies researching the impact of ecotourism on environmental protection and sustainable development in a destination with a developed ecotourism sector, little research has been done of the impact of ecotourism development in a setting that is in the early stages of development. This study aims to fill this gap and discuss ecotourism's viability as a natural resource management practice for

Zapatera Island and possible replacement for the extractive income generating activities currently degrading the island.

1.2 Objectives

- To distinguish factors that could promote or obstruct ecotourism and its ability to influence conservation and sustainable development on Zapatera Island.
- To obtain an understanding of the current state of ecotourism on Zapatera Island.
- To assess local communities' attitudes towards ecotourism and its ability to influence conservation and sustainable development on the island.
- To propose recommendations for the development of ecotourism on Zapatera Island.

1.3 Research Questions

- What factors could hinder or promote the feasibility of tourism to positively impact conservation and sustainable development on Zapatera Island?
- What is the current level of ecotourism development on Zapatera Island?
- What attitudes towards ecotourism development do residents of Zapatera Island currently hold?

1.4 Tourism in Nicaragua

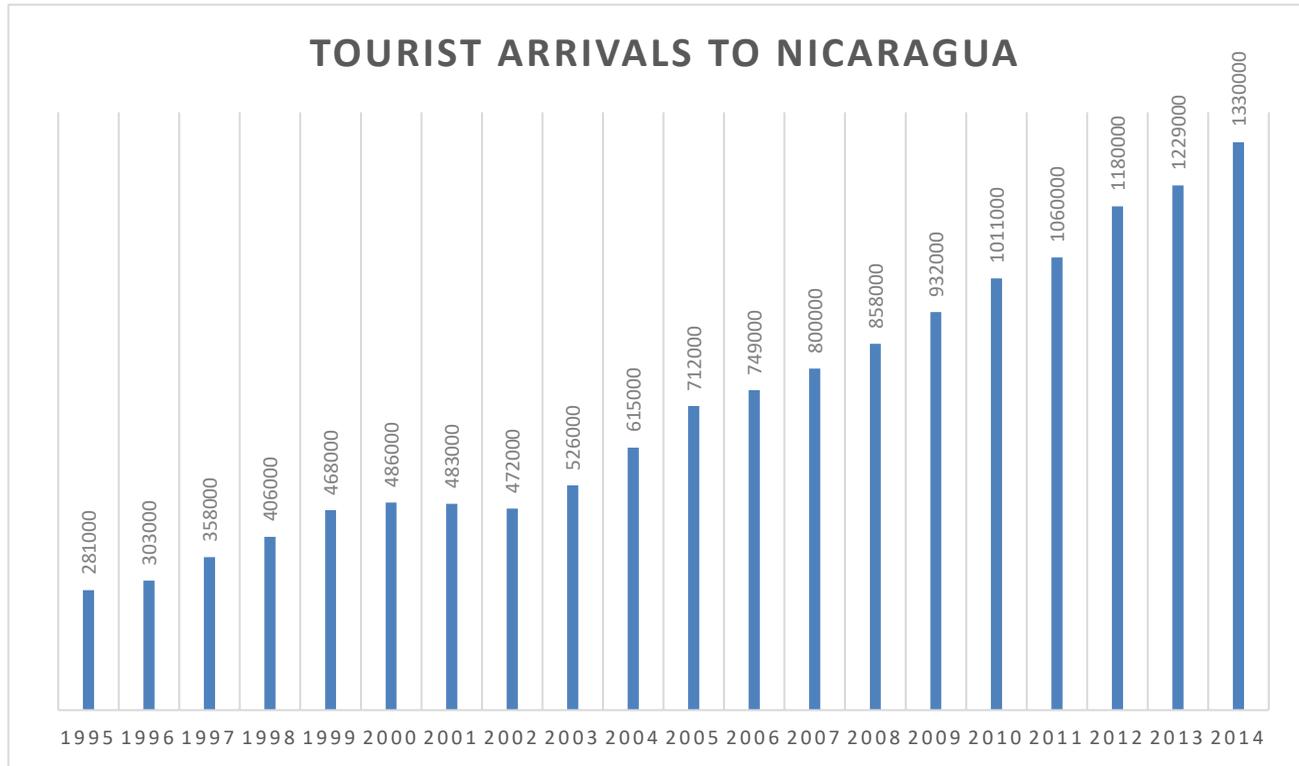
Global tourism is increasing at a rapid rate, making it one of the fastest growing industries in the world (Ntibanyurwa, 2006; Das and Chatterjee, 2015b). In 2012, international tourist arrivals exceeded one billion people, which generated over one trillion USD and accounted for 9% of the world GDP. This is expected to grow by approximately 3.3% annually through 2030 (Leung et al., 2015). The United Nations has declared 2017 the International Year of Sustainable Tourism for Development, hoping to “advance the contribution of the tourism sector to the three pillars of sustainability – economic, social and environmental, while raising awareness of the true dimensions of a sector which is often undervalued” (UNWTO 2015).

This trend of tourism growth can be seen in Nicaragua¹. International tourist arrivals in Nicaragua has grown from 615,000 in 2004 to 1,330,000 in 2014 (World Bank, 2016). A 4.8% growth in tourist arrivals between 2014 and 2015

¹ See Graph 1.

was also reported in the Central Bank of Nicaragua 2015 annual report. The impact of this growth can be seen in the income increase generated by tourism, rising from 445.4 million USD in 2014 to 528.8 million USD in 2015 (Banco Central de Nicaragua, 2015). The total contribution of tourism to the national GDP was at 9.9% in 2014, and this is predicted to rise to 10.4% of Nicaragua's GDP by 2025. In terms of job creation, Nicaragua's tourism industry generated 82,000 jobs directly and 195,500 jobs indirectly in 2013, accounting for 3.3% and 7.9% of the country's total employment respectively. This is predicted to grow to 92,000 direct jobs and 280,000 indirect jobs created by tourism in Nicaragua in 2024 (World Travel and Tourism Council, 2015).

Graph 1. *Tourist Arrivals to Nicaragua* (World Bank, 2016)

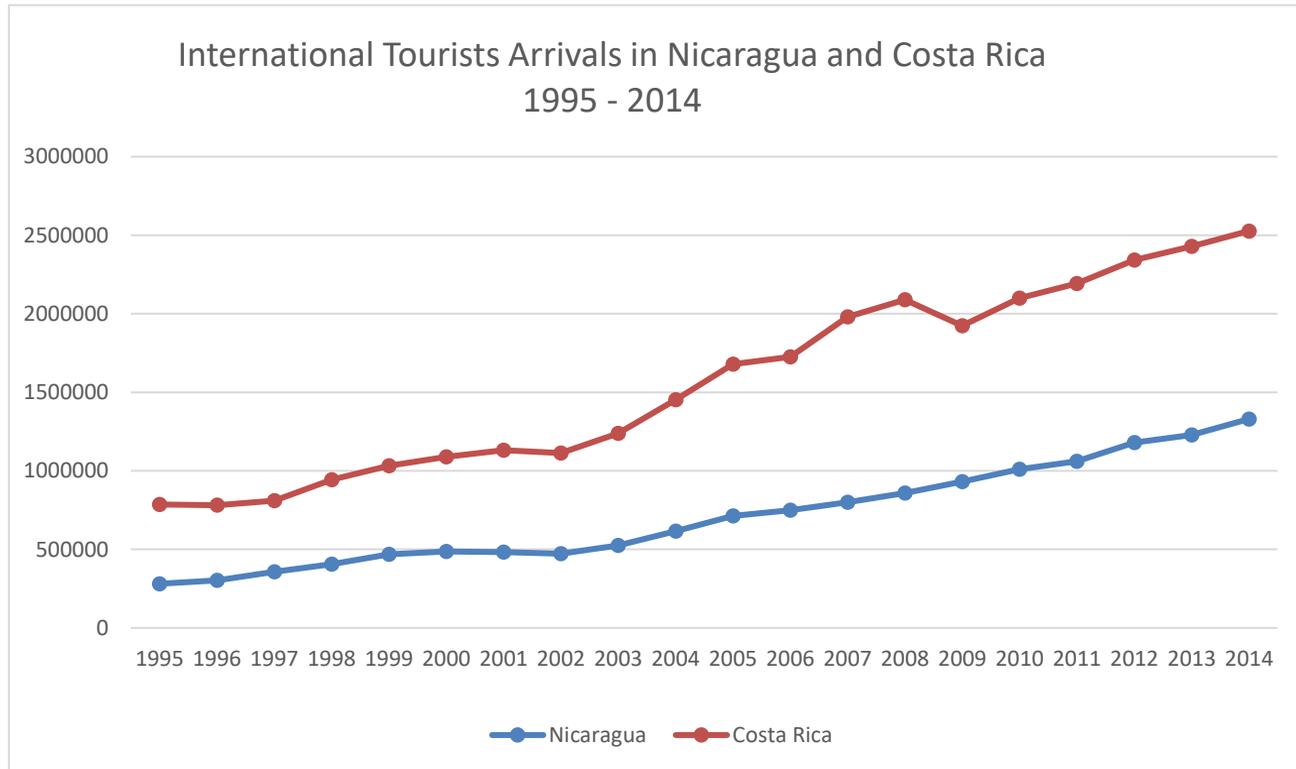


While Nicaragua's tourism sector is experiencing growth, the country's turbulent past involving natural disasters and political upheavals has kept the tourism sector from growing at the same rates as other countries in Central America, such as neighboring ecotourism heavyweight Costa Rica². In 1972 a magnitude 6.2 earthquake struck the country, killing around 20,000 people and devastating Managua (Hunt, 2011). Political revolution reached the country in 1979 as the guerrilla Sandinista National Liberation Front (FSLN) overthrew the existing government (Staten, 2010). From 1979 to 1992 the FSLN controlled the country, bringing about nationalization and a redistribution of property (Chevallot, 2006). The FSLN were challenged by the Contras, a revolutionary opposition force supported and armed by the United States' government. This led to violent conflict. A United States trade embargo and Nicaragua's lack of access to loans from World Bank, brought about through pressure from the United States, further added to Nicaragua's instability (Staten, 2010).

FSLN lost the 1990 election, ushering in the end of the conflict in Nicaragua, and in 2004 the World Bank erased 80% of Nicaragua's debt (Chevallot, 2006). Yet even with increasing political stability the country was ravaged by poverty (Hunt, 2011). Hurricane Mitch then hit in 1998, killing around 3,000 and destroying the country's infrastructure (Staten, 2010). While tourism statistics for Nicaragua pre-1995 are lacking, the conflict acted as strong deterrent to tourism in the country (Usher and Kerstetter, 2014). Even after the implementation of the peace accords, Nicaragua was still at the mercy of its reputation amongst international tourists as a country of conflict and danger (Barb, 2004). Furthermore, after the presidential election of FSLN member Daniel Ortega in 2006 and 2011, some believe foreigners are deterred from investing in Nicaragua's tourism sector (Usher and Kerstetter, 2014).

² See Graph 2.

Graph 2. *International Tourist Arrivals in Nicaragua and Costa Rica, 1995-2014 (World Bank, 2016)*



In recent years Nicaragua has begun to shed its rough reputation. Media's positive reaction to Nicaragua as a tourism destination has been increasing. In the last two years alone Nicaragua has been referred to as the "hidden gem of the Americas" (DeVoretz, 2016), a necessary addition to every traveller's "must-visit list" (Lewis, 2016) and "a destination for travellers seeking off-the-beaten-track adventure" (Saurine, 2015). Nicaragua is now seen as a more youthful destination fit for tourists looking for an adventurous, exotic vacation (Barb, 2004).

The Nicaragua Institute for Tourism (INTUR) undertakes various projects to promote tourism, including rural and sustainable tourism, within the country, working towards the promotion of the sustainable development, growth and competitiveness of Nicaragua's tourism sector. Efforts are also made to reduce poverty through tourism initiatives (Tecoloco, 2016). Emphasis is placed on accomplishing these goals through the participation of various stakeholders (Zapata and Plazaola, 2009). During the mid-1990s INTUR worked with Nicaragua's national universities to develop the promotion of tourism as a key professional training area (Barb, 2004). Implementation of the government Policy and Strategy of Sustainable Rural Tourism in Nicaragua (*Política y Estrategias de Turismo Rural Sostenible en Nicaragua*) promoted the development of rural tourism through pro-environmental practices, investment promotion initiatives, and the cooperation of private and public entities. Other efforts aim to aid in the development of community-based tourism, diversify various tourism models in order to directly benefit local communities, and link rural youth to a stronger sense of cultural identity (Zapata and Plazaola, 2009). In 2016, INTUR partnered with a public relations firm to handle marketing and public relations in the United States and Canadian markets. Focus is being placed on the promotion of Nicaragua as a place for various tourism niches, including ecotourism (Kanski, 2016).

1.5 Protected Areas in Nicaragua

According to the International Union for Conservation of Nature (IUCN), a protected area is a "clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (IUCN, 2016a). IUCN classifies protected areas using a Protected Areas Categories System, ranging from "strict nature reserves" to "protected areas with sustainable use of natural resources" (IUCN, 2016b).

Table 1. *IUCN Protected Areas Categories (IUCN, 2016b)*

| Category | Description |
|----------|-----------------------------------------------------------|
| Ia | Strict Nature Reserve |
| 1b | Wilderness Area |
| II | National Park |
| III | Natural Monument or Feature |
| IV | Habitat/Species Management Area |
| V | Protected Landscape/Seascape |
| VI | Protected Areas with Sustainable Use of Natural Resources |

As of 2014, 37.1% of Nicaragua’s total land area is classified as a terrestrial protected area, increasing from 15.4% in 1990 (World Bank, 2016). The numbers are lower for marine protected areas, with 4.37% classified as a protected area (MPATLAS, n.d.). There are currently 95 protected areas in Nicaragua (Protected Planet, 2016).

Table 2. *IUCN Management Categories of Nicaraguan Protected Areas (Protected Planet, 2016)*

| Category | Count | Percentage of Nicaraguan Protected Area |
|----------------|-------|-----------------------------------------|
| Ia | 1 | 1.05 |
| II | 2 | 2.11 |
| III | 2 | 2.11 |
| IV | 46 | 48.42 |
| VI | 1 | 1.05 |
| Not reported | 40 | 42.11 |
| Not applicable | 3 | 3.16 |

Management of protected areas in Nicaragua falls under the jurisdiction of the Ministry of Natural Resources and Environment (MARENA), the main governing body for Nicaragua’s natural resources. MARENA manages these protected areas through the National System of Protected Areas (SINAP). SINAP’s objectives include managing and protecting Nicaragua’s protected areas through the inclusion of civil society, the promotion of sustainable natural resource use and the promotion of effective management schemes through work with local stakeholders (Hernández, 2005). In 1996 MARENA began to work towards co-management of protected areas (Bundschuh et al., 2007). Through co-management, MARENA shares the responsibilities of implementing the area’s management plan with NGOs, including universities, local communities, and co-operatives (Somarriba-Chang and Gunnarsdotter, 2012).

1.6 Lake Nicaragua

Lake Nicaragua is the largest freshwater lake in Central America, with a maximum width of 70 km and a total water volume of 104,000 hm³ (Montenegro-Guillén, 2004). It is part of the largest international water basin in Central America, along with Lake Managua and the San Juan River. Four port cities are located on the perimeter of the lake: San Carlos, San Jose, San Miguelito and Granada. A volcanic chain crosses the lake, forming the lake's various islands and islets (ViaNica, n.d.a.).

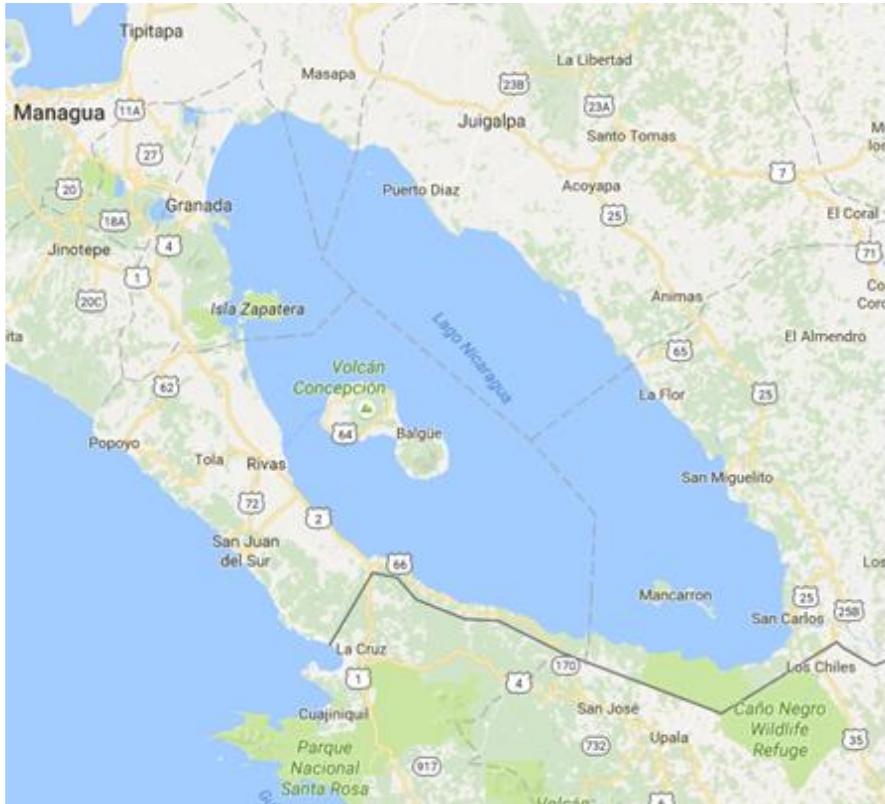


Figure 1. Map of Lake Nicaragua (Google Maps, 2016)

More than 40 species of fish, including 16 species of cichlids, can be found in the lake. Based on a study in 1995, native cichlids once made up 58% of the lake's biomass. The lake also was once home to the Caribbean bull shark (*Carcharhinus leucas*), but shark-fin processing plant built on the San Juan River led to population decline (ViaNica, n.d.a). Fishing is currently allowed in Lake Nicaragua with the exception of the protected tarpon (*Megalops*

atlanticus), Nicaraguan shark (*Carcharhinus nicaraguensis*), tropical gar (*Atractosteus tropicus*) and sawfish (*Pristis perotetti*) (Arévalo, 2010).

There are currently three main contamination threats for Lake Nicaragua. Lack of proper treatment means much of the nearby cities' wastewater gets discharged directly into the river basin. Agriculture around Lake Nicaragua leads to water contamination by fertilizer, animal manure and other agricultural by-products. Lake Nicaragua is also threatened by invasive species, such as tilapia (*Oreochromis niloticus*) (Montenegro-Guillén, 2004).

Further environmental degradation is likely to increase if plans to build a trans-oceanic canal through Nicaragua continue (Huete Pérez et al., 2015). The proposed canal is being developed by the Hong Kong Nicaragua Canal Investment Development Co., Limited (HKND) (Andersen, 2015). Once built, the canal would connect the Pacific Ocean and Caribbean Sea, spanning 278 km and requiring significant dredging of Lake Nicaragua (Andersen, 2015; Huete-Perez, Meyer and Alvarez, 2015). Three times the length and almost twice the depth of the Panama Canal, the Nicaragua Canal would excavate more soil than any other project in history. Critics of the canal worry about the project's potential to severely contaminate the country's drinking water (Silva, 2013; Meyer and Huete-Pérez, 2014; Miller, 2014; Andersen, 2015). Despite the potential consequences of the canal, the Nicaraguan government has done little in the way of independent environmental impact studies or consultation with locals (Huete-Perez, Meyer and Alvarez, 2015).

1.7 Zapatera Archipelago National Park

Zapatera Archipelago National Park was founded in 1983 and is located in Lake Nicaragua. The park consists of Zapatera Island, the second largest island in Lake Nicaragua with an area of 52 km², and the surrounding 10 islets. The 10 islets vary in size, with the largest being Isla Muerto, Jesus Grandes, El Platano and El Armado (Arévalo, 2010; ViaNica, n.d.b).

The island is home to deer (*Cervidae*), armadillos (*Dasyproctidae*), pacas (*Cuniculus*), and jaguars (*Panthera onca*). Zapatera Island also boasts rich birdlife, with populations of falcons (*Falco peregrinus*), toucans (*Ramphastidae*), kingfishers (*Alcedines*), parrots (*Psittaciformes*), parakeets (*Melopsittacus undulates*) and oropendolas (*Psarocolius*) (ViaNica, n.d.b).

As of 2008, 556 people live on Zapatera Island and the surrounding islets (INIDE, 2008). Most of the residents migrated to Zapatera Island to work on the farms of the island's previous owners, while others came during the country's agricultural reformations of the 1980's or to avoid military conscription

(Arévalo, 2010; ViaNica, n.d.b). Despite the area's national park designation, approximately 90% of the land is privately owned by large estate owners, leaving only 10% under state ownership. This land is own by families with historic ties to the island. Cañas, for example, was the first village founded on Zapatera Island as was funded in 1887 by Victoriano Lanuza (Arévalo, 2010). In modern Cañas you still find many community members with the Lanuza name. Many of the island's residents live on land owned by the large estate owners, with only two communities, La Guinea and Cañas, communally owning the land they live on. The private land ownership of much of the national park has lead to frequent land conflicts, including disagreements over who owns the land and what activities are permitted (Arévalo, 2010).

Residents of Zapatera Island identify themselves as an impoverished people who are forced to violate laws regarding extraction of natural resources, overfishing, cattle production due to their lack of options in terms of legal income generating activities (Arévalo, 2010). Arévalo's (2010) study in the communities of Cañas and Guinea found few livelihood methods that are not based on natural resources: boat construction, small store ownership, the selling of labor and migration to Costa Rica for jobs. Natural resource-based activities far outnumber those not based on natural resources: fishing, logging for the firewood and timber market, raising cattle, agriculture for household consumption, hunting and the raising of domestic animals (Arévalo, 2010).

Zapatera Island National Park boasts historic cultural artifacts. It is home to the largest rock petroglyphs in Central America, measuring at 50 meters wide to 25 meters long (El Nuevo Diario, 2015). There are also large black basalt stone statues measuring between 1.1 and 2.25 meters in height with a diameter no more than 60 centimeters, representing various animals and human figures, such as gods and community leaders. These cultural artifacts were created by the *Chorotegas*, an indigenous tribe of Mesoamerican heritage, between 800 – 1350 AD. These sites were most likely used as sanctuaries and ceremonial centers (Vianica, n.d.a.). Unfortunately, many of the island's artifacts have been plundered for display in both museums and private collections (Duarte, 2013; Vianica, n.d.b.). A collection of 127 petroglyphs dating back to 500 B.C. still remain on a volcanic rock platform on Isla Muerto, making it one of the densest concentration of petroglyphs in lower Central America (Künne, 2006). The community of Sonzapote still boasts 25 ancient tombs and replica statues. These replicas were based off the original stone statues and were brought to the island in order to invigorate tourism (Duarte, 2013; Vargas, 2015). The artifacts of Zapatera Island are in need of further research, yet this endeavor is hindered by a lack of funding and uncertain property rights (Künne, 2006).



Figure 2. A young boy uses water to show Isla Muetro petroglyph to tourists.

Management of Zapatera Archipelago National Park is based on the original management plan created in 1983. In 2009 MARENA began work on an updated management plan, it has yet to be completed. The rules set through by the management plan are difficult to uphold, as there is one ranger for the entire island. The ranger has not been able to prevent the island from rampant deforestation and illegal logging, hunting, and overfishing, (Arévalo, 2010).

2 Literature Review

2.1 Community-based Ecotourism

Tourism is a sector made up of many subcategories, such as nature tourism, agrotourism, anthro-tourism, safari tourism, academic tourism, wilderness tourism and more (Leung et al., 2015). Community-based ecotourism is one faction of tourism that challenges many aspects of mainstream, mass tourism.

Ecotourism was first defined by Hector Ceballos-Lascurain in the early 1980's (Das and Chatterjee, 2015a). In a 2006 interview Hector Ceballos-Lascurain recounted his initial definition.

“...Tourism that involves travelling to relatively undisturbed natural areas with the specific object of studying, admiring and enjoying the scenery and its wild plants and animals, as well as any existing cultural aspects (both past and present) found in these areas. Ecotourism implies a scientific, aesthetic or philosophical approach, although the ‘ecotourist’ is not required to be a professional scientist, artist or philosopher. The main point is that the person who practices ecotourism has the opportunity of immersing him or herself in nature in a way that most people cannot enjoy in their routine, urban existences.” (Ceballos-Lascurain, 2006, p.2)

Despite its roots in the early 1980's, a definition for ecotourism agreed upon by all has yet to be found, although there are some frequently used in ecotourism literature. Two frequently cited definitions are put forward by the International Ecotourism Society and the Quebec Declaration of Ecotourism. The International Ecotourism Society defines ecotourism as “responsible travel to natural areas that conserves the environment and improves the well-being of local people” (Fletcher, 2015, p.1). The Quebec Declaration of Ecotourism, developed as part of the 2002 United Nations International Year of Tourism, defines ecotourism as tourism that:

“Contributes actively to the conservation of natural and cultural heritage; includes local and indigenous communities in its planning, developing and operation, and [contributes] to its well-being; interprets the natural and cultural heritage of the destination to visitors; [and] lends itself better to independent travelers, as well as to organized tours of small group sizes.” (Quebec Declaration on Ecotourism, 2002, p. 1-2)

Instead of trying to tackle the challenge of developing a definition agreed upon by every organization and government, one can simply analyze the different aspects of ecotourism as outlined by various authors. By doing this we get a well-rounded understanding of ecotourism as defined by multiple organizations and academics.

Table 3. *Frequently Cited Aspects of Ecotourism*

| Aspect of Ecotourism | Citation |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Minimize environmental impact of ecotourism endeavour | (Honey, 2008; Sander, 2012; Das and Chatterjee, 2015a) |
| Contribute to environmental and cultural awareness among local residents and visitors | (Wearing and Larsen, 1996; Honey, 2008; Das and Chatterjee, 2015a) |
| Provide financial benefits for conservation | (Beeton, 2006; Honey, 2008; Sander, 2012; Das and Chatterjee, 2015a) |
| Provide benefits for local communities | (Beeton, 2006; Honey, 2008; Sander, 2012; Das and Chatterjee, 2015a) |
| Nature based | (Beeton, 2006; Honey, 2008) |
| Practice respect for local culture | (Honey, 2008) |

Further confusion in regards to the definition of ecotourism stems from the division of ecotourism into two categories: hard and soft ecotourism. Hard ecotourism is categorized as more active and catering to small groups with few services and comforts provided (Singh, Slotkin and Vamosi, 2007). It caters to visitors with a solid knowledge of conservation looking for longer stays and seeking more specialized trips and activities (Eagles, McCool and Haynes, 2002; Singh, Slotkin and Vamosi, 2007). Hard ecotourism is typically associated with areas not easily accessed through conventional tourism, such as coastal reefs and mountainous regions (Duffy, 2002). Soft ecotourism, on the other hand, promotes more convenience and comfort for the tourists who prefer shorter stays and more outside services to ensure their comfort (Singh, Slotkin and Vamosi, 2007).

Ecotourism can be further categorized through community-based ecotourism (CBET). CBET is an ecotourism subtype that places an additional emphasis on the local communities' involvement in all aspects of an ecotourism project (World Wildlife Fund International 2001; Pêgas et al., 2013). The difference between ecotourism and CBET stems from CBET's requirement that local communities be involved in every aspect of the ecotourism project instead of being involved passively. The active involvement of local communities' means

they are involved from the initial conception of the ecotourism initiative to its execution, whether in partnership with outside organizations and governments or as an ecotourism project owned and operated by local community members (Kiss, 2004). “Community-based” can seem like an unnecessary phrase, as ecotourism calls for the involvement of local communities (Beeton, 2006). Yet it is important to recognize the difference between ecotourism that truly involves the active involvement of communities through community management or co-management in contrast to involvement that is purely through community member employment in ecotourism businesses developed and managed by non-community members.

The emergence of ecotourism lodges, or ecolodges, came in the 1980s (Kwan, Eagles and Gerhardt, 2008). Ecolodges act as the housing for tourists during their trip, yet they are different from mass tourism hotels and resorts. Kwan, Eagles and Gerhardt (2008) define an ecolodge as “a nature-dependent tourist lodge that attempts to meet the philosophy and principles of ecotourism, including environmentally responsible principles of design, construction and operations.” These lodges are intended to blend in with the surrounding environment instead of overwhelming it (Epler Wood, 2002; Ceballos-Lascurain, 2006).

Demand for ecotourism is increasing as tourists are more interested in the promotion and development of sustainable practices while they travel (Center for Responsible Travel, 2016). This stems from an increase in global awareness of environmental issues and people’s desire to adopt sustainable habits (Eagles, McCool and Haynes, 2002).

In order to further understand ecotourism, it is necessary to understand those who partake in the consumption of ecotourism services, also known as ecotourists. Past research has analyzed the characteristics that define the ecotourist market profile. While different researchers identify a variation of ecotourist characteristics, there are some common themes. Ecotourists tend to be white (Fletcher, 2015), evenly split between genders (Patterson, 2007), middle-aged (Duffy, 2002; Epler Wood, 2002; Fletcher, 2015), highly educated (Duffy, 2002; Epler Wood, 2002; Patterson, 2007; Kwan, Eagles and Gerhardt, 2008) and with high levels of income (Duffy, 2002; Kwan, Eagles and Gerhardt, 2008) and free time in which to travel (Duffy, 2002). They have an interest in nature and conservation (Duffy, 2002; Patterson, 2007; Perkins and Brown, 2012), desire to leave civilization and enter “the wilderness” (Epler Wood, 2002; Fletcher, 2015), seek “authentic” experiences (Duffy, 2002) and “desire intense, physical, visceral experiences that give them a sense of completion and achievement” (Fletcher, 2015, p.5). These ecotourist characteristics vary when discussing hard and soft ecotourism, as these two types of ecotourism typically

attract different types of ecotourists (Eagles, McCool and Haynes, 2002; Singh, Slotkin and Vamosi, 2007). Understanding what Fletcher (2015) refers to as the “ecotourist gaze,” or how ecotourists judge their ecotourism experience and their satisfaction of it, is essential to providing a sustainable and impactful ecotourism endeavor.

Other stakeholders are involved in ecotourism as well, with varying levels of responsibilities, strengths and weaknesses.

Table 4. *Stakeholders in Ecotourism. Adapted from: (UNEP, 2002)*

| Stakeholder | Example | Main Role(s) |
|------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Ecotourism Industry | Travel agents, ecolodge managers | Provide services to ecotourists. |
| Local Communities | Women’s groups, indigenous communities | Providing local knowledge and insight, maintain local environment through sustainable practices |
| Non-governmental Organizations | Conservation organizations, development charities | Protect biodiversity and environment, capacity building, ecotourism certification, establishing standards and sustainable development. |
| Government Agencies | Environment and tourism ministries | Develop policies that protect and manage natural resource, create policy environment where ecotourism can develop. |
| International Development Agencies | World Bank, European Commission, InterAmerican Development Bank | Financial services via loans and grant programs, micro-enterprise development, conservation of biological diversity |
| Academic Institutions | Universities, Research Organizations | Offer technical support through academic research, develop best practices |

Supporters of ecotourism praise its ability to aid the conservation of natural resources and protected areas while contributing to sustainable development of local communities. Critics are quick to point out the ways in which ecotourism falls short of these accomplishments in various case studies. Much research has been done to offer suggestions to promote the benefits of ecotourism while minimizing its negative aspects.

2.1.1 Ecotourism as a Form of Conservation

The main reasoning behind ecotourism as a form of conservation is that impoverished communities rely on natural resource degradation for their livelihoods. In order for conservation to be successful it must tackle poverty

elimination (Pêgas et al., 2013; Das and Chatterjee, 2015b). Ecotourism acts as an alternative to environmentally degrading livelihood methods, contributing to both conservation and sustainable community development (Wearing and Larsen, 1996; Pound, 2003; Stronza and Pêgas, 2008; Jalani, 2012; Reimer and Walter, 2013; Pêgas et al., 2013; Usher and Kerstetter, 2014; Das and Chatterjee, 2015b). The development of surf tourism in Las Salinas, Nicaragua has replaced agriculture and salt harvesting (Usher and Kerstetter, 2014), and residents of the Puerto Princesa Subterranean River National Park in the Philippines have converted their fishing boat to tourist ferries as ecotourism replaced the areas destructive fishing industry (Jalani, 2012). In a case study of ecotourism in Southwestern Cambodia ecotourism employment has not completely eradicated dependence on logging and hunting as a livelihood practice, but it has helped reduced it (Reimer and Walter, 2013). Yet the fact that alternative livelihoods do not completely replace more extractive and degrading livelihoods but merely supplement them is one current critique of the success of alternative livelihood projects for conservation. Critics also state the idea of alternative livelihoods is based on the false assumption that communities are homogenous and affect environmental degradation equally (Wright et al., 2015).

Environmental education for both local communities and visiting ecotourists is a necessary aspect of ecotourism and can have positive effects on conservation (Wearing and Larsen, 1996; Sander, 2012). Environmental education programs in local communities can raise awareness of the benefits of conserving natural resources and help develop positive attitudes towards conservation (Wearing and Larsen, 1996; World Wildlife Fund International, 2001; Stronza and Pêgas, 2008; Kiper, 2013; Pêgas et al., 2013; Reimer and Walter, 2013; Usher and Kerstetter, 2014; Das and Chatterjee, 2015a). Ecotourism in Praia do Forte, Brazil has made local communities more aware of the value of sea turtles and has led to a decrease in sea turtle hunting (Stronza and Pêgas, 2008). Environmental education in the form of a tour guide training program for local residents near Tortuguero National Park, Costa Rica has also led to an increase in environmental awareness and quality of guide services (Jacobson and Robles, 1992).

Environmental education of ecotourists may seem unnecessary as they already have an interest in conservation, yet it's beneficial in its ability to reinforce these attitudes (Sander, 2012). Ecotourism programs can educate tourists on ways to minimize environmental degradation during their visits and demonstrate the role humans play in nature (Sander, 2012). Tourists develop an appreciation for the culture of the area they visit as well (Kiper, 2013). As the environmental education increases the tourist's awareness of the area's culture and environment tourists return home and become advocates for the ecotourism

destination (Sander, 2012). This leads to an increase in donations to direct conservation, such as donating directly to the project, and indirect conservation, such as donating to conservation organizations in general (Sander, 2012). Environmental education for local communities can also lead to environmental education for tourists. Tour guides trained near Tortuguero National Park not only increased their own environmental awareness but became better equipped to contribute to the environmental awareness of the ecotourists (Jacobson and Robles, 1999).

2.1.2 Ecotourism as a Form of Sustainable Development

Job provision for local communities is the most cited contribution of ecotourism towards sustainable development (Jacobson and Robles, 1992; Wearing and Larsen, 1996; Taylor et al., 2003; Jamal and Stronza, 2008; Stronza and Pêgas, 2008; Novelli and Gebhardt, 2009; Wearing and Neil, 2009; Reimer and Walter, 2013; Snyman, 2014; Usher and Kerstetter, 2014; Das and Chatterjee, 2015b). Ecotourism can create both direct employment, such as tour guides, ecolodge employees or cooks, and induced employment in sectors impacted by ecotourism (Wearing and Neil, 2009). Employment in ecotourism is one of the more reliable sources of income (Snyman, 2014) and can allow residents to earn more than other livelihood methods (Novelli and Gebhardt, 2009). In Posada Amazonas, an ecotourism project in Peru, those involved in ecotourism gain 25% more than what they would have earned from other activities (Jamal and Stronza, 2008; Stronza and Pêgas, 2008). Women in particular are benefited by ecotourism job creation. While they still are concentrated in low-skill jobs, women's pay is closer to man's pay in the ecotourism sector than in other sectors (Global Report on Women in Tourism 2010, 2011). Through the multiplier effect ecotourism also provides jobs in sectors for goods and services linked to a growing ecotourism industry, further impacting the local, regional and national economy (Ntibanyurwa, 2006; Reimer and Walter, 2013; Das and Chatterjee, 2015b).

In addition to job provision ecotourism can contribute to the development of a local community's infrastructure (Wearing and Larsen, 1996; Snyman, 2014; Das and Chatterjee, 2015b). Proper infrastructure is necessary for ecotourism (Panasiuk, 2007; Leung et al., 2015). Without well-developed infrastructure an ecotourism project runs the risk of leading to environmental degradation and failing to meet its sustainable goals. For example, an area without a sustainable energy source leads to an increased demand for unsustainable fuels such as firewood (Das and Chatterjee, 2015a). Infrastructure developed by, and for, ecotourism can be divided into three categories: technical infrastructure, social infrastructure, and management standards (Panasiuk, 2007; Leung et al., 2015).

Table 5. *Infrastructure Necessary for Tourism (Panasiuk, 2007; Leung et al., 2015)*

| Type of Infrastructure | Example |
|--------------------------|----------------------------------|
| Technical Infrastructure | Transportation |
| | Fuel |
| | Communication services |
| Social Infrastructure | Health care services |
| | Public administration |
| | Education |
| Management Standards | Rules regarding site use |
| | Management goals |
| | Vision statements and objectives |

A study of ecotourism projects in six Southern African countries shows that infrastructure developed for ecotourism benefits communities as a whole, demonstrating that infrastructure development in an area will positively impact multiple sectors regardless of the reason it was developed (Snyman, 2014; Pratt, Rivera and Bien, 2011). This infrastructure also connects the local region to nearby areas, strengthening the regional economy (Ntibanyurwa, 2006).

Ecotourism can bring about social benefits to a local community. Scheyvens (1999) outlines four forms of empowerment that can, and should, be strengthened by properly managed ecotourism: economic, psychological, social and political. While this is outlined as part of a framework to analyze the impacts of ecotourism ventures on local communities, it can be used to establish the best case scenario in terms of ecotourism's impact on community empowerment. Empowerment can be brought about by the capacity building and community development required by sustainable ecotourism development. Ecotourism can help build a community's organization and leadership skills, contributing to their empowerment in all four aspects of Scheyvens' Empowerment Framework (Stronza and Pêgas, 2008). Other ecotourism projects cite ecotourism's ability to help a local communities' youth population, such as through the development of language skills or other skills for future employment, as a way to empower the community's upcoming generation (Wearing and Larsen, 1996; Bartholo, Delmaro and Bursztyn, 2008).

Table 6. *Scheyvens' Empowerment Framework (Scheyvens, 1999)*

| Type of Empowerment | Description |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Economic | Communities have access to consistent and equitable economic benefits from ecotourism which is used for community improvement. |
| Psychological | Communities are optimistic about future and abilities of residents and exhibit pride for traditions and culture, aided by ecotourism's respect and appreciation for local traditions. |
| Social | Community experiences sense of cohesion and strong community groups, especially through use of ecotourism funds on social development projects. |
| Political | Diverse social groups in communities have proper representation and are able to take part in every aspect of ecotourism development and implementation. |

Ecotourism can help revive the traditional culture and cultural pride of an area (Jamal and Stronza, 2008; Reimer and Walter, 2013). An ecotourism project in Cambodia shows that tourists' effort to learn about the area's culture has led to a revival of the traditional culture in the area (Reimer and Walter, 2013). Ecotourism assigns a value to cultural traditions and offers an incentive to maintain and preserve them (Whelan, 2013).

2.1.3 Possible Negative Impacts of Ecotourism

Despite the possible benefits of ecotourism it is still an extractive activity capable of degrading the environment it claims to protect. Negative impacts can happen even at low levels of use (Farrel and Marrion, 2001).

Many negative environmental impacts have been recorded in projects claiming to use ecotourism methods. Soil erosion, habitat alteration, air, noise and water pollution, litter, biodiversity loss, and the disruption of local flora and fauna are all recorded impacts of ecotourism (Krüger, 2005; ScienceDaily, 2008; Novelli and Gebhardt, 2009; Das and Chatterjee, 2015a; Das and Chatterjee, 2015b). A study of the Rio-On Pools in Belize found that the site has degraded water quality due to erosion from walking paths and parking lots, pollution from improperly maintained pit toilets, litter, and displacement of flora and fauna (ScienceDaily, 2008). Another study of eight protected areas in Costa Rica and Belize found the most commonly reported environmental impact from visitors is trail erosion, visitor created trails, exposed roots, illegal hunting and fishing, vandalism, graffiti, litter, water pollution, vegetation loss and the illegal collection of flora and fauna (Farrell and Marrion, 2001). Rules to manage visitor behavior may be in place, yet it does not ensure that all visitors will follow these rules and guidelines. In Namibia tourists have set up campsites near watering

holes, disrupting wildlife, and failed to follow established roads despite set rules banning these activities (Novelli and Gebhardt, 2009).

While ecotourism attempts to protect an area's natural resources, in reality it can place further stress on it. In Nepal, ecotourism tour guides are increasing wood usage in order to provide fuel for tourists (Duffy, 2002). Similar experiences are reported in the Galapagos Islands, as local residents increase fishing to feed tourists (Taylor et al., 2003). An increase in ecotourism revenue also gives local communities money in which to buy advanced tools to exploit natural resources, such as advanced hunting, fishing and agriculture technology (Stronza and Pêgas, 2008; Taylor et al., 2013; Das and Chatterjee, 2015b).

Ecotourism can lead to negative social impacts in host communities. Ecotourism's attempts to increase respect and appreciation of local cultures can in fact diminish local culture, despite the fact that this culture is what ecotourists pay to see (Novelli and Gebhardt, 2009). By applying value to traditional cultures it becomes commodified, turning traditional events, rituals and even the local people themselves into a resource capable of being bought and sold (Barna, Epure and Vasilescu, 2011; Leung et al., 2015). Introduction of tourist social values can further add to the distortion of local values and culture (Wearing and Larsen, 1996). An example can be seen in the increase of alcohol consumption in ecotourism areas influenced by the tourists (Wearing and Larsen, 1996; Das and Chatterjee, 2015b). Yet some attempts to maintain traditional culture and values can be just as damaging. Concern over diminishing cultural traditions in Namibia due to tourism caused one white farmer to set up an artificial community village on his land, with one tourist claiming "...it is like visiting a zoo, but instead of animals you have people..." (Novelli and Gebhardt, 2009).

2.1.4 Barriers to Successful Ecotourism Development

Table 7. *Barriers to Successful Ecotourism Development*

| Barriers to Successful Ecotourism Development | |
|-----------------------------------------------|---------------------------------------------------|
| ➤ | Lack of capacity and skills constraints |
| ➤ | Lack of motivation from communities |
| ➤ | Lack of motivation and knowledge of professionals |
| ➤ | Benefit leakage |
| ➤ | Faults in ecotourism job creation |
| ➤ | Lack of financial capital |
| ➤ | Lack of visitation |
| ➤ | Ecotourism as a buzzword |

To minimize negative impacts of ecotourism and maximize the possibility for conservation and sustainable development one must acknowledge the barriers to ecotourism development.

A lack of communities' capacity to take advantages of ecotourism development and minimize its negative impacts

is one of the most significant barriers. While ecotourism can create jobs for local communities, community members are often stuck in low skill and low pay jobs due to lack of skill and bargaining power (Tosun, 2000; Das and Chatterjee, 2015a; Das and Chatterjee, 2015b). High skill jobs are given instead to foreigners, contributing to foreign control (Tosun, 2000; Stradas, Corcoran and Petermann, 2007; Novelli and Gebhardt, 2009; Razzaq et al., 2012; Kim, Park and Phandanouvong, 2014). Women are particularly at risk of being denied entry into tourism employment due to skill constraints (Das and Chatterjee, 2015a). A case study of ecotourism in Odisha, India shows women were given vocational training but lacked the education and skills to benefit from it (Das and Chatterjee, 2015b). A lack of business knowledge also acts as a barrier to ecotourism entrepreneurship in local communities, as can be seen in the case of Bahia Ballena, Mexico. An ecotourism business owner from the local community was dedicated to his business but experienced difficulties due to a lack of business knowledge (Wittmer, Simon and McGowan, 2015). Stradas, Corcoran and Petermann (2007) outline potential capacity barriers to ecotourism development within local communities.

Table 8. *Potential Capacity Barriers to Ecotourism Development within Local Communities (Corcoran and Petermann, 2007)*

| Potential Capacity Barriers |
|-------------------------------------------------------------------------------------------------------------------|
| Lack of formal education or literacy skills. |
| Lack language skills, national or foreign. |
| Variation in ways of handling little, hygiene, and upkeep of infrastructure and buildings. |
| Lack of skills in food preparation catered towards tourists. |
| Different concepts in time and time management |
| Lack of planning skills concerning possible consequences of tourism and inability to control tourism development. |

Local communities may also experience a lack of motivation towards ecotourism development. True participation means communities should be given the opportunity to decline involvement in ecotourism if desired. Yet a problem emerges when local communities wish to participate but are demotivated by beliefs that their ideas won't be considered (Tosun, 2000; Kim, Park and Phandanouvong, 2014). In one Indian ecotourism project a lack of motivation came from the belief that the national government was invested in promoting already developed ecotourism projects instead of focusing on new projects (Dogra and Gupta, 2012). Some communities also face a high cost of participation when they are so focused on mere survival that they have little motivation to participate in the long term planning of ecotourism (Tosun, 2000; Novelli and Gerbhardt, 2009; Kim, Park and Phandanouvong, 2014).

Ecotourism professionals can also face a lack of motivation. Government leaders may be resistant to outside input (Hampton and Wadud, n.d.). Resistance to work with local communities can come from the belief that they have nothing to offer ecotourism development (Tosun, 2000; Dogra and Gupta, 2012). Lack of motivation to coordinate between sectors stems from a lack of desire to share responsibilities with other organizations they perceive to be encroaching on their territory (Tosun, 2000). Even with proper motivation to work with local communities, a lack of knowledge regarding how to ensure community participation can act as a barrier (Tosun, 2000).

Benefit leakage, or benefits that do not remain within the ecotourism destination, can act as a severe barrier to success (Wearing and Larsen, 1996; Epler Wood, 2002; Stronza, 2005; Stronza and Gordillo, 2008; Das and Chatterjee, 2015b). There are two types of benefit leakage – inequitable distribution of benefits between stakeholders and inequitable distribution of benefits within a community (Das and Chatterjee, 2015a). Inequitable distribution of benefits between communities and other involved stakeholders, such as international tourism businesses, stems from import and export leakage

(UNEP, n.d.). Import leakages are caused by the services and goods needed in the ecotourism sector that must be imported. Export leakages stem from money that returns to foreign investors (Miller, 2016).

There are also barriers to the benefits of ecotourism job creation. Proponents of ecotourism state it will create jobs that can replace extractive livelihood methods. Case studies show us that ecotourism may not replace but merely supplement them (Stronza and Pêgas, 2008; Novelli and Gebhardt, 2009). If ecotourism does completely replace other forms of income generation the community is at risk leaving a diverse, stable economy, making them vulnerable to risks and shocks in the ecotourism sector (Stronza, 2008). Ecotourism jobs are seasonal in nature and at risk of factors such as political stability and currency exchange rates, causing boom and bust cycles (Nash, 2001; Epler Wood, 2002; Stronza, 2008; Stronza and Gordillo, 2008; Usher and Kerstetter, 2014). The ability of ecotourism to tackle unemployment is further hindered by an increase of migration towards the destination. Unemployment rates can increase as more people move to the ecotourism destination (Taylor et al., 2003; Novelli and Gebhardt, 2009; Jalani, 2012).

Lack of financial services or existing financial capital hinders local communities' ability to develop their own ecotourism businesses (Novelli and Gebhardt, 2009; Tosun, 2000; Thomas, 2013; Kim, Park and Phandanouvong, 2014). This can be seen in ecotourism projects in Ghana, where most community members are peasant farmers with low income and therefore the unable to finance their own projects (Thomas, 2013). Ownership and investment are two important determinants of control in ecotourism. Without financial capital local communities may be at the mercy of foreign ecotourism investors, lessening their control of the ecotourism development (Tosun, 200; Miller, 2016).

Even if all other barriers to successful ecotourism development are avoided, a lack of visitation to an ecotourism destination makes all the possible benefits of ecotourism unreachable. A study of CBET projects in Belize cited a lack of a marketing strategy to attract their target audience as a factor in ecotourism project failure (Sproule, 1996). Leung et al. (2015) outlines possible reasons for a lack of visitation.

Table 9. *Possible Causes of Lack of Visitation to Protected Areas and Tourism (Leung et al., 2015)*

| Possible Causes for Lack of Visitation to Protected Areas and Tourism |
|-----------------------------------------------------------------------------------------------------|
| Lack of market awareness among travellers and tourist sector. |
| Access to protected areas is difficult and cost significant time and money. |
| Lack of tourism infrastructure. |
| Lack of tourism support services and facilities, such as restaurants and transportation. |
| Lack of natural and/or cultural attractions. |
| Lack of unique selling points compared to competing destinations elsewhere. |
| Poor quality of tourism product. |
| Tourism product not matched to market demand. |
| External factors: political instability, war or conflict, terrorism threats or human rights issues. |

Ecotourism is also often used as a marketing buzzword (Wight, 1993; Duffy, 2002; Krüger, 2005; Honey, 2008; Das and Chatterjee, 2015a; Das and Chatterjee, 2015b). This ploy involves labelling a project as ecotourism without any real sustainability. It is referred to as “eco-sell,” “ecoexploitation,” and “greenwashing” (Wight, 1993; Das and Chatterjee, 2015a). Problems arise when tourists believe they are supporting true ecotourism, only to be fooled by “superficial, feel-good rhetoric and minor cost-saving modifications” (Honey, 2008, p. 25).

2.1.5 Techniques for Successful Ecotourism Development

Development of ecotourism is complex, and there is no-one-size fits all technique to ensure success (Bartholo, Delamaro and Bursztyn, 2008; Honey, 2008). Yet through the analysis of previous ecotourism research we can identify common ecotourism characteristics and utilize them as suggestions.

Table 10. *Suggestions for Ecotourism Development*

| Suggestions for Ecotourism Development | |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ➤ Active participation of communities | True to its name, CBET relies on the active participation of local communities. Ecotourism projects with community participation leads to community members with positive views of ecotourism and an increased likelihood of ecotourism development success (Kibicho, 2004; Pêgas et al., 2013; Kim, Park and Phandanouvong, 2014; Rasoolimanesh et al., 2016). |
| ➤ Capacity buildings for communities and governments | |
| ➤ Reduce benefit leakage | |
| ➤ Develop environmental education | |
| ➤ Faults in ecotourism job creation | |
| ➤ Offer financial services and funding | |
| ➤ Improving marketing of destination | |

Participation creates communities more likely to follow conservation strategies

and sustainable natural resource management practices (Wearing and Larsen, 1996; Andrade and Rhodes, 2012). It can also help project managers avoid conflict with communities by understanding and incorporating the community's desires and points of view (Wearing and Larsen, 1996). Local communities know the ecotourism product better than outsiders, providing a more authentic experience for ecotourists and giving project managers an opportunity to use their traditional knowledge (Wearing and Larsen, 1996; Kim, Park and Phandanouvong, 2014). Participation also develops a community's ability to address future development threats and take advantage of future opportunities (Aref and Redzuan, 2009; Hwang, Stewart and Ko, 2011).

In order to have true participation in ecotourism development community participation must be voluntary (Andrade and Rhodes, 2012). Should the community desire involvement in the ecotourism development they must be involved in all aspects of the project, from the initial planning stage to its implementation (Wearing, 2001). Lack of capacity, community organization, or relevant skills can act as a barrier to participation, so it is important to develop a scenario where all stakeholders have the skills needed to participate (Dogra and Gupta, 2012). Participation can be encouraged by ensuring all stakeholders feel comfortable and able to express their feeling and making sure the language, location, format or even time of a meeting is not set up in a way as to exclude a stakeholder (Borrini-Feyerabend et al., 2007).

Capacity building for local communities can minimize many of ecotourism's possible barriers to success. Therefore, a community capacity building program is necessary for successful ecotourism development (Stradas, Corcoran and Petermann, 2007). Training related to hospitality, environmental management, marketing, language and tour guide skills can lead to the development of skills needed for local communities to gain access to a wider range of ecotourism jobs (Wearing and Neil, 2009; World Wildlife Fund International, 2011; Dogra and Gupta, 2012). This is especially effective when done in the form of long-term training courses emphasizing learning-by-doing (World Wildlife Fund International, 2011). Capacity building can also give communities the skills needed to successfully participate in the ecotourism development and decision making process (Neth, 2008).

Government and ecotourism professionals can benefit from capacity building as well. Professionals involved in ecotourism development require capacity building in areas such as sustainable business practices, marketing strategies, community participation and ecotourism product quality (Tosun, 2000; Stradas, Corcoran and Petermann, 2007). These skills, as well as the skills required by local communities, are specific to each situation and are dependent on the area's existing skill levels, partnerships and resources. It is important that all capacity

building be developed in accordance to the specific needs of a particular ecotourism development project (Beeton, 2006; Nikkhah and Redzuan, 2010).

Reduction of benefit leakage is necessary to ensure the benefits of ecotourism remain within a community. Capacity building reduces benefit leakage by allowing local community members to occupy skilled ecotourism positions instead of having these positions filled by foreign employees (Wearing and Neil, 2009; World Wildlife Fund International, 2011; Dogra and Gupta, 2012). The UNWTO provides suggestions for the minimization of benefit leakages. Local ownership of small ecotourism enterprises should be encouraged. The development of linkages between communities and other tourism stakeholders, such as the tourism industry, will encourage ecotourism businesses to source labor from local communities while strengthening the multiplier effect. Developing local supply sources whenever possible can further encourage ecotourism endeavours to source their supplies from local communities (Denman and Denman, 2004).

In order to maximize benefits gained from the environmental education of tourists an atmosphere of learning that emphasizes learning both before and after the trip must be created (Sander, 2012). This can be provided by easy access to a variety of informational material, both online and in print, outlining conservation issues of the destination, rules for tourists visiting the destination, and the area's cultural heritage (Wagner et al., 2011). During the visit environmental education should be provided through well-trained guides and hosts (Jacobson and Robles, 1992).

Financial services must be made available to local communities in order to provide community members with start-up capital for small ecotourism businesses (Epler Wood, 2008). Common sources of finance for local communities include government organizations, multilateral donor agencies such as the World Bank, NGOs, private bank and investors and investment corporations (Drumm and Moore, 2005). Microfinance initiatives can be used to finance small ecotourism enterprises, and are especially beneficial for groups such as women, that have traditionally been excluded from access to capital through formal finance institutions (Nikkhah and Redzuan, 2010; Miller, 2016). Microfinance schemes are not without its downsides, and the seasonal, boom and bust nature of ecotourism in addition to high interest rates can hinder a community member's ability to repay their microfinance loan (Miller, 2016).

Adequate environmental monitoring must take place in order to track the impacts of ecotourism development. Community-based monitoring can take place within a collaboration between local communities, academic institutions, governmental organizations and industry (Conrad and Hilchey, 2010; Miller, Leung and Lu, 2012). Monitoring should focus on two types of monitoring;

population monitoring of flora and fauna, and ecosystem monitoring on ecosystem processes. The training and implementation of a community-based monitoring program should begin as soon as possible in the ecotourism development process in order to provide baseline data needed to detect any changes caused by ecotourism development and develop objectives (Marris, 2001). In addition to providing valuable monitoring data, community-based monitoring can build local community capacity, increase participation, and encourage a sense of ownership of the ecotourism project (Conrad and Hilchey, 2010). Community-based monitoring can be done in the form of household questionnaires, environmental surveys, observation forms, and through photographs (Marris, 2001).

Ecotourism development depends on the participation of ecotourists. Without ecotourist interest in a destination it becomes almost impossible to receive benefits from ecotourism. Patterson (2007) outlines possible marketing techniques to make ecotourists aware of an ecotourism destination.

Table 11. *Marketing Techniques for Tourism Destination (Patterson, 2007)*

| Marketing Techniques | |
|--------------------------------------------------------|-------------------------------------|
| Focused direct sales (in person, via telephone) | Signage |
| Brochures | Print media (newspapers, magazines) |
| Videos | Trade shows |
| Internet (Internet-based advertisements, social media) | Conferences |
| Television and radio | |

While most ecotourism marketing schemes focus on the attraction of international tourists, it is important to bring in national tourists as well. Marketing to national tourists can help develop pride, awareness and appreciation of the country’s environment (Honey, 2008; Sander, 2012). Costa Rica has marketed to Costa Ricans by reducing national park entry costs for residents, and many ecotourism business offer reduced rates for residents as well (Sander, 2012).

2.2 Co-Management

Co-management is a resource management practice that emerged in the 1990s (Plummer and FitzGibbon, 2010) and involves “a situation [in] which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources” (Borrini-Feyerabend et al., 2007, p.1). These actors generally refer to the government and the local community,

although other stakeholders such as NGOs and international development projects can and should also be involved in the co-management process (Borrini-Feyerabend et al., 2007; Berkes, 2009). There are various strands of co-management: “integrated conservation and development, participatory natural resource management, decentralization and devolution and community-based natural resource management” (Armitage, Berkes and Doubleday, 2010, p.2). Borrini-Feyerabend et al. (2007) list the main principles of co-management.

Table 12. *Principles of Co-managements (Borrini-Feyerabend et al., 2007)*

| Principles of Co-management |
|------------------------------------------------------------------------------------------|
| Recognition of different values and interest. |
| Acceptance of various types of natural resource management entitlements. |
| Transparency in natural resources management. |
| Ability of civil society to hold increasingly important roles in the management process. |
| Harnessing of the various advantages of different actors. |
| Appreciation of the importance of process. |
| Learning-by-doing via continuous revisions and improvements. |

While community management is an aspect of co-management, the terms cannot be used interchangeably. Community management refers to local communities managing resources on their own, while co-management involves the cooperation of multiple actors in the resource management process (Ballet, Koffi and Boniface Komona, 2009).

Like any resource management practice, there are both positive and negative aspects of co-management. One of co-management’s most prevalent strengths is its ability to integrate the knowledge, resources and capabilities of the involved stakeholders (Borrini-Feyerabend et al., 2007). Natural resource management requires a vast amount of complex information, and it is impractical to assume that one stakeholder would contain all of this information on their own. Due to the changing nature of ecosystems and humans the information needs to be constantly updated, making the static information of one stakeholder inadequate (Berkes, 2009). Co-management allows the knowledge and resources of local communities, governmental agencies, non-governmental agencies and the scientific community to meld together, although it is important to state that in co-management the knowledge of all stakeholders should have equal status (Armitage, Berkes and Doubleday, 2010). In terms of the capabilities of both local communities and the central government, co-management combines the best aspects of the two. Local communities tend to have better access to up to date information regarding the resource and at times they possess the social capital needed to implement and monitor the management plan cost effectively.

Central governments, on the other hand, have better access to large scale ecological information, advanced analytical tools and greater financial resources. They also are further removed from the social pressures that drive local communities to exploit the resources (Ballet, Koffi and Boniface Komona, 2009).

Co-management works to ensure the equity of those who are most impacted by conservation: local communities and resource users. The sharing of both the responsibilities and benefits of resource management gives local communities a voice they may not have had before (Borrini-Feyerabend et al., 2007). These stakeholder interactions are often more meaningful than in non-participative management regimes (Armitage, Berkes and Doubleday, 2010).

By utilizing the strengths of the various stakeholders through the co-management process many aspects of resource management become easier to accomplish: “(1) data gathering, (2) logistical decisions such as who can harvest and when, (3) allocation decisions, (4) protection of resources from environmental damage, (5) enforcement of regulations, (6) enhancement of long-term planning, and (7) more inclusive decision making” (Carlsson and Berkes, 2005, p. 71).

Despite the numerous benefits of co-management, it is not without its drawbacks. The inclusion of multiple stakeholders at all aspects of the management regime leads to a complex, costly and lengthy process. It can also lead to necessary compromises in terms of conservation goals (Borrini-Feyerabend et al., 2007). While proponents of co-management will tout its ability to meld the knowledge of varied stakeholders, this integration of knowledge is difficult to put into action. Knowledge held by local communities and resource users are often not trusted by the scientific community or government agencies and often difficult for them to understand and use in an effective manner (Berkes, 2009). Co-management will also not solve every problem in a natural resource management regime, such as issues of inequitable power distribution within the communities (Carlsson and Berkes, 2005).

During the co-management process there are ways to ensure the equitable distribution of responsibilities and benefits amongst the stakeholders. Information needs to be distributed equally and barriers for negotiation should be minimized, such as by ensuring discussion platforms are organized in a way that allows all stakeholders to have the ability to express their opinions. Capacity building to give all stakeholders the necessary skills to negotiate can promote equity in co-management (Borrini-Feyerabend et al., 2007).

3 Methodology

3.1 Study area

Field work for this study took place on Zapatera Island between the dates of 8 March and 15 March, 2016. Zapatera Island was chosen due the combination of its national park status, young ecotourism sector, and need for environmental preservation. Research of ecotourism on Zapatera Island also builds upon previous research done on the island by researchers from the Swedish University of Agricultural Sciences.

Five communities around the perimeter of the island, Santa Maria, Sonzapote, Cañas, Guinea and El Morro, were chosen as study sites due to their diverse geographies, socioeconomic status and level of tourism involvement. Santa Maria currently experiences tourism through the three ecotourism businesses. Sonzapote is also set up for tourism, although there are far fewer tourist amenities than in Santa Maria. Santa Maria and Sonzapote are the only communities on the island that regularly receive tourists. Cañas, Guinea and El Morro do not regularly receive tourists. Despite the current lack of ecotourism development in these three communities, research in these communities was still relevant to the study. Due to the small nature of the current ecotourism sector on the island, the majority of the island is not employed by or directly involved in the ecotourism sector. Research in these communities not directly involved in ecotourism is therefore necessary to not only understand the state of the majority of the island, but also to research communities that may be attempting to develop ecotourism in the future.

3.2 Grounded Theory

Grounded theory is a qualitative research theory introduced in 1965 and is currently used in a variety of different research fields (Corbin and Strauss, 1990; Charmaz, 2006). Charmaz (2006) describes grounded theory as “methods [that] consist of systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories ‘grounded’ in data themselves” (p.2). Instead of outlining a set of strict rules with no room for flexibility, grounded theory gives the researcher guidelines and principles in which to discover emerging theories from the collected data (Strauss and Corbin, 1998; Charmaz, 2006). Data in grounded theory can come from a variety of sources, such as interviews, government documents, or newspapers (Corbin and Strauss, 1990).

Unlike other qualitative methods, grounded theory begins with an independent analysis followed by a literature review (Strauss and Corbin, 1998; Charmaz, 2006). This prevents researchers from merely aiming to support or test their hypothesis instead of observing the situation at hand (Suddaby, 2015). Data collection, such as interviews, and analysis should happen concurrently, allowing for the analysis to help guide future interviews and ensuring all relevant aspects of the topic at hand are captured (Corbin and Strauss, 1990).

Charmaz (2006) argues use of intensive interviews is suitable for grounded theory research. Intensive interviews use open-ended, semi-structured questions quickly followed by follow-up questions to gain further clarification of the topics being discussed. In order to be considered an intensive interview certain aspects must be upheld. The interview must aim to dig beneath the surface through the requesting of more details, the questioning of the participant's emotions and actions regarding a particular topic and the further exploration of topics of interest. At the end of the discussion the participant should feel validated, respected and appreciated for their input and participation (Charmaz, 2006).

By using intensive interviews during grounded theory research interviewees are given the ability to “break silences and express their views, tell their stories..., reflect on earlier events, [act as] experts, choose what to tell and how to tell it, share significant experiences and teach the interviewer how to interpret them...” (Charmaz, 2006, p. 27).

Analysis of these interviews involves coding, the process where data is broken down and interpreted (Corbin and Strauss, 1990). Using concepts and categories, coding allows for connections and patterns within the data to be established. Coding occurs in two stages. The initial phase involves assigning conceptual labels, defined as concepts, to each segment of raw data. These concepts are then synthesized and organized in order to form overarching, abstract categories. Through these categories patterns and variations from the pattern are established (Corbin and Strauss, 1990; Charmaz, 2006).

3.3 Methods and tools used

Data was collected during the study through semi-structured interviews and then analyzed using grounded theory methods. Interviews were done through an in-person translator. Semi-structured intensive interviews were used for various reasons, as outlined by Case (1990) and Charmaz (2006). The open framework of a semi-structured interview provided a less-intrusive experience for Zapatera Island residents. This gave them the opportunity to better discuss more sensitive issues, such as financial or personal hardships. They also allowed for a deeper understanding of research participant's views by providing opportunities to hear

their reasons for giving an answer. Research participants were given opportunities to ask me questions about the research and the purpose of my study, enabling an open, two-way form of communication.

Group semi-structured interviews were done whenever desired by the research participants. Research participants were given the option to talk with me alone or as part of a small group. This most frequently took place with husband and wife pairs, co-operative members or relatives. While most group semi-structured interviews took place with two or three people, one interview with the women's collective in the community of El Morro involved approximately 20 women, during which only a few people responded to my questions.

The open-ended interview questions were developed before the field work took place and translated into Spanish. Generally, one pre-translated question would extend into multiple follow-up questions created on the spot after listening to the answers. This flexibility allowed each interview to be tailored to the expertise and interest of the respondent.

During the interview the translator translated the responses after each question, which I then recorded in my notebooks using brief notes. As required in grounded theory methods, I analyzed interview data during the data collection process. After each interview I wrote a more detailed report, often using the translator to confirm that nothing was missed. At the end of every day I compiled an overall report of the day's interviews to better understand the overarching themes. This also helped me prepare for the next day's interview by pointing out what topics seemed to be important to those being interviewed and what information needed to be triangulated or clarified. The audio from each interview was also digitally recorded, after receiving verbal consent from those being interviewed.³

A conscious effort was made to gain a diverse sample of respondents, interviewing people with varying levels of involvement or interest in ecotourism, varied genders and ages and status within the community. Word of mouth was used to find people interested in being interviewed. Initial contact was made through the help of an ecotourism business owner in Santa Maria, as well as through contact with community leaders discovered during previous studies on the island. Once an interview was completed snowball sampling was used, with respondents identifying further community members who may want to be involved in the research. This technique worked well and led to many interviews with people that most likely would not have been found without the respondents' referrals.

³ The pair of English tourists were not recorded, as the interview was in English and more informal.

Interviews were divided between ecotourism business owners, ecotourism employees, community members not employed in tourism, and tourists. An additional interview was completed in Granada with a representative from MARENA after the field work was completed. An interview with Business Owner 3⁴ was done through e-mail communication. Business Owner 2 was interviewed by Margarita Cuadra from the Swedish University of Agricultural Sciences, and information from that interview was used in this research.

Table 13. *Ecotourism Business Owners*

| Owner | Short Description of Business |
|------------------|------------------------------------------------------------------------------------------------------------------------|
| Business Owner 1 | Ecolodge providing one and two day all-inclusive excursions, including meals, guided tours and a stay in the ecolodge. |
| Business Owner 2 | Ecolodge and spa offering artisanal fishing, guided tours and non-motorized water sports such as kayaking. |
| Business Owner 3 | Outdoor space offering camping and excursion on the island. |

Interviews with tourism employees involved those directly employed in two of the three hotels in Santa Maria as wells as those sporadically employed as boat drivers and tour guides. These interviews took place both on the island, in Santa Maria and Isla Muerto and account for 8 of the 26 interviews. Topics discussed in these interviews involved the ways in which tourism has impacted the respondents' life, their reasons for initially getting involved in Zapatera Island's tourism sector, and opinions regarding the possible increase of tourism on the island. Community members involved in tourism were interviewed in order to gain first hand insight into how tourism on the island developed and what impacts it is having on the island and the local communities.

Community members not employed in Zapatera Island's tourism sector accounted for 18 of the 26 interviews and took place in Sonzapote, Santa Maria, Cañas, Guinea and El Morro. Despite their lack of ecotourism employment, interviews ranged from those with no current plans to partake in tourism to those who have attempted or are currently attempting to bring tourism to their communities, whether on their own or through community co-operatives. These interviews began with a conversation regarding the person or group's current level of contact with tourists and their general opinion of tourism on the island. Other topics included what impacts the research participant believes tourism could have on their life, their family and their community, what they and their community would need in order to take part in tourism, and the ability of tourism to act as an alternative livelihood to activities such as fishing or logging.

⁴ In order to protect the privacy and anonymity of research participants all participants will be referred to by their title.

Community members not employed in the ecotourism sector on Zapatera Island were interviewed to gain an understanding of the attitudes, beliefs and expectations people who had never been employed in ecotourism had in the ecotourism sector, what attempts, if any, have been made to bring tourism to other communities on the island, and what issues are currently acting as obstacles to tourism development in these communities. Because ecotourism is only currently in two communities on the island, research involving community members not employed in the ecotourism gives insight into the lives of the majority of the residents on Zapatera Island.

Two groups of tourists from the same hotel in Santa Maria were interviewed during their stay on the island. The other two tourism businesses were not hosting any visitors during the field study. The first interview was with a young adult sibling pair from England and took place at two separate times – once at the beginning of their trip and once at the end of the trip. I also accompanied the pair during some of their touristic activities on the island. The second interview was with a group of Spanish tourists currently living in Nicaragua and took place on the last day of their trip. Interview topics included their reasons for coming to Zapatera Island, their expectations for the trip and whether or not these were met, their general impressions of the island, and whether or not the involvement of local communities, the environment, the cultural artifacts and the sustainability of the ecotourism business affected their choice to come to Zapatera Island. Interviews with tourists were used to develop an understanding of the expectations of those who choose to visit Zapatera Island and what the general impressions are of the island and the island's tourist offerings once tourists have experienced tourism on the island.

A representative of MARENA was interviewed after the field work in her office in Granada. Topics discussed include MARENA's role on Zapatera Island and the steps that must be taken to develop an ecotourism project in Nicaragua.

Secondary sources were used in addition to semi-structured interviews. Journal articles on CBET, Nicaraguan government documents, guides on CBET and ecotourism management and case studies of other ecotourism projects were consulted in order to develop a broad knowledge on the subject of ecotourism in protected areas. Previous research on ecotourism case studies from around the world were analyzed to determine what factors led to the success or failure of ecotourism. These secondary sources were also used to outline the needs of a successful ecotourism project and discover the possibilities of ecotourism development.

3.4 Data Analysis

Once the interviews were completed, I attempted to analyze the data using methods from grounded theory, as outlined in *Grounded Theory: a Practical Guide* (Birks and Mills, 2015), *Constructing Grounded Theory* (Charmaz, 2006), *Ground Theory Research: Procedures, Canons and Evaluative Criteria* (Corbin and Strauss, 1990) and *Remodeling Grounded Theory* (Glaser and Holton, 2011).

As part of grounded theory's coding technique, every interview transcript was marked with various concepts outlining the topic being discussed in the interview. Concepts were typically one or two words and described the topic being discussed, such as "overfishing" or "job creation." These concepts were then organized into more abstract categories, such as "responses to tourism development" and "obstacles to tourism development faced." The qualitative data analysis software MAXQDA was useful in developing and placing concepts. Once the concepts were established I took them off the computer and used elaborate mind-maps in order to visually discover patterns and deviations from the established patterns. This also gave me an opportunity to use counting as a way of establishing which answers were given more frequently.

3.5 Limits and scope of study

Like most research, this study has its limitations – lack of financial resources, language barriers, lack of previous research on Zapatera Island, and difficulty in obtaining information from government agencies.

While a seven day visit to Zapatera Island was sufficient to develop a basic understanding of the issues regarding ecotourism and sustainable resources management on the island, a longer stay would have allowed not only for more interviews but for more time to develop trust within the community, possibly leading to more detailed and personal responses. Developing trust was difficult when I could only spend at most two days in a particular community. Two employees of an ecolodge in Santa Maria were the only non-tourist respondents I was able to interview more than once, and it was clear that their answers became less guarded and more detailed during the second interview. Unfortunately financial restraints and the self-funded nature of this study meant I could not afford to stay or employ the use of a translator any longer.

Language barriers stymied the direct flow of information between those being interviewed and myself. While having a translator during the field study allowed for open communication in the interviews, the study could have benefited from more informal conversations, such as during meal times, which were difficult through the use of a translator. Using a translator in such an

undeveloped, rural landscape meant I was at the mercy of the physical abilities and motivations of my translator as well, making interviews and excursions that required more strenuous journeys difficult.

Background information in the form of peer-reviewed journal articles, documents on the history of Zapatera Island, or other academic publications was difficult to come by when researching Zapatera Island. Researchers at the Swedish University of Agricultural Sciences have conducted research on Zapatera Island in the past and information gathered during previous studies on the island was invaluable. Yet there is little in academic writing about Zapatera Island. Many studies focus on the nearby Ometepe Island instead, and even that pales in comparison to research done on ecotourism in other parts of the world, such as Sub-Saharan Africa. This lack of research makes it difficult to analyze information on the island's current environmental conditions, especially in terms of the various flora and fauna levels on the island, or past attempts to bring ecotourism to the island. It also made it difficult to fact check statements made during interviews or analyze the history of people living on Zapatera Island. As more studies are done surrounding Zapatera Island this gap can be filled, allowing for a more detailed and complex pictures of the island's environment and the various communities' role within it.

Obtaining official information from both MARENA and INTUR was challenging at times throughout the study. Through the use of translation services, it was easy to analyze any written information put out by MARENA and INTUR, yet obtaining interviews with members of these organizations proved to be difficult. More time in Nicaragua to develop contacts within these organizations and more frequent access to a translator or increased Spanish language skills may have solved this problem. Yet the interview I did manage to have with a representative of MARENA was brief and answers were very guarded and focused only on positive responses. Not being able to interview anyone from INTUR limited the scope of the study and made minimal government documents available online the only source of information on their involvement on Zapatera Island.

4 Results

4.1 Ecotourism Business Owners

Business Owner 1 is a Nicaraguan man from a Zapatera Island land owner family with historical ties to the island. While he does not live on the island full time, he currently owns the land in which his small ecotourism lodge resides. He created an ecolodge in Santa Maria as a way to provide an economic activity that does not degrade the environment and is suitable for the skill level and capabilities of the local communities.

There were many obstacles Business Owner 1 had to overcome while developing his ecolodge. First was the capacity building of the employees. Business Owner 1 recounted issues with training staff members, with employees reacting to the requirements of working in the ecolodge with apprehension and confusion. Each employee had to be trained in various hotel management skills. Employees were taught how to follow strict time schedules when working with tourists, something they were not initially used to. Residents of Zapatera Island typically have more relaxed views on time management, which clashes with the tourist value of punctuality.

“You know we have to eat at 12:30 because at 1:30 we go to another place and they don’t understand why we’re so strict with the hour...For them, for their culture, everything has to be slow...It’s the same [for them] if lunch is at 12 or 1...Their life is so slow...I have to put a clock in the kitchen. A huge clock. So all the time [they] see the hour...Now they understand really well and they ask me what time it is...[but] even today, 7 years later, they are late.”

Employees also had to be taught the necessity of maintaining cleanliness standards. Requirements set by Business Owner 1, such as the need to change the bedding and toiletries after every visitor regardless of how long that visitor stayed at the ecolodge, were met with confusion. Replacing soap that has been used once, for example, clashed with the personal beliefs of the employees. In their own homes they would use soap as sparingly as possible to save money, making the idea of “wasting” partially used toiletries difficult to understand.

“We change the clothes of the bed every time anyone sleeps. [The employees think] why, if its clean? Because they change it every 15 days in their house maybe...Here in the hotel if any one even stays for one night you have to change the bed clothes.”

Initial confusion over cleanliness standards were quickly replaced with appreciation, as Business Owner 1 allows employees to take partially used toiletries such a soap and toothpaste home with them so they do not go to waste.



Figure 3. A typically meal cooked local community members at an ecolodge in Santa Maria

Employees of Business Owner 1's ecolodge were given the opportunity to learn culinary and food safety skills from a two day culinary and food safety skills workshop hosted in Granada by the Luxembourg embassy. At the workshop they were taught not only how to prepare delicious meals but how to properly store fresh

foods, sanitary food serving methods, and how to prevent the spread of food borne illnesses. In terms of meal quality this workshop has accomplished its goal, as the food received high praise from the tourists.

In addition to capacity building, Business Owner 1 claims employees had to acclimate to a new way of living, and even know they can begin to tire of tourists after lengthy stays. The communities of Zapatera Island are, like many rural communities, typically calm and quiet. Tourists, on the other hand, bring with them a level of noise not often seen on the island. The ecolodge is powered by a gas generator located next to the house of one of the employees, creating noise when tourists are at the lodge. While the employees do not mind living with the excitement on weekends, saving week days to live their life in the manner they're used to, it can become overwhelming in the tourist high seasons when there is little relief from the tourists.

“After three days with tourists [the ecolodge employees] get tired, they get tired of the sound...Sometimes it's fun. You have to have it. If you live there every day, if someone makes a lot of noise one day it's okay. But we're in Easter week presently. I went there...back and forth, people coming and going, it was 9 days... [and] they go so crazy. [The employees] almost got sick. Too much stuff.”

Business Owner 1 has seen positive changes in the local area since the creation of the ecolodge. In order to provide the ecolodge with running water on

an island without plumbing, a pump and tank system was built. Water is now pumped from the lake for use in the ecolodge. In addition to providing the ecolodge with plumbing, a bathroom and clothes washing area was built for an employee couple living next to the ecolodge. Residents of Zapatera Island wash their clothes and their bodies in the lake. This practice is prevalent on the island, as it is deeply rooted in the island's culture.

“It's a really strong tradition...they don't like [not washing in the lake]. It's a special time, Women get the children, they wash the clothes, they wash the children, and they wash themselves...It's a special time. Cultural time.”

Yet the employee with the modern shower has appreciated the change, leading Business Owner 1 to believe it's something that can eventually change on the island.

Business Owner 1 has multiple plans to further develop his ecotourism business. Current plans involve investing more in online advertisements and building an online mailing list. Long term plans involve expanding and building a farm on the island. Business Owner 1 discussed a desire to repopulate the island of native parrots that were once found there. Previous plans were in place to bring ecotourism to other communities on the island that did not materialize. The plan involved building a small living space for tourists in select communities around the island, with a regular boat system to carry tourists around the island.

While Business Owner 1 has many plans to further develop on the island, there are two major barriers to this development. A lack of funds prevents further ecotourism development. Previous plans to receive funding from various organizations have not succeeded. Another major barrier to further development is a lack of visitors. When visiting Nicaragua four main tourist destinations appear in most of the travel and tourist literature; Granada, San Juan Del Sur, Ometepe Island and the Corn Islands. Zapatera Island does not yet play a prominent role in the guide books nor is it frequently advertised as an offer in tourist agencies. Not many people know about Zapatera Island's existence or its ecotourism offerings. Business Owner 1 works to contact local travel agencies and tourism organizations, but as of now Zapatera Island is still over shadowed by the more well-known tourist offerings.

Business Owner 2 is the sister of Business Owner 1 and owns her own small ecolodge within walking distance of Business Owner 2's ecolodge in Santa Maria. She began a pilot ecotourism project in 2008. By 2009 she created an ecolodge, motivated by a desire to contribute to the conservation of the island's natural resources and the improvement of the lives of local residents. In order to

maintain sustainable techniques she was trained and certified in sustainable tourism by the Rainforest Alliance.

Business Owner 2's ecotourism business has led to the creation of other projects on the island. The ecolodge's resources were used to develop the Denis Martínez School in Santa Maria, which has around 70 students from 11 communities around the Zapatera Island. The school aids in



Figure 5. Classroom at the Denis Martínez School in Santa Maria.



Figure 4. Cattle on the shore of Lake Nicaragua, Zapatera Island.

transporting children to the school and provides meals, uniforms and school supplies to the students. Business Owner 2 was also involved in the recent creation of an archaeological classroom in Santa Maria through a partnership with the European Union,

INTUR, the Luxembourg government, and other organizations such as the NGO *Fundacion Cocibolca*. Additional benefits to the community involve job creation and skill training.

Business Owner 2 discussed the various environmental issues currently seen on the island. The main issue is deforestation caused by firewood harvesting. Cattle ranching also exists on the island, leading to its own environmental impacts. She also claims there has been a significant loss of biodiversity, with various animals, such as parrots, disappearing from the island.

Non-environmental issues on the island are a lack of education amongst the island's youth and a lack of organization and political will to develop ecotourism on the island. According to Business Owner 2, the development of Zapatera Island as an ecotourism destination is not in government plans and the current MARENA management plan for the island is not acceptable, although it is unclear for whom or what she believes it is unacceptable for.

In 2012 Business Owner 3, a man from a separate land owning family than Business Owners 1 and 2, used family land to offer camping for ecotourists. Motivation to create an ecotourism business came from a desire to help the local community while sharing the heritage of the island.

“...I decided to do trips where I could help the locals by giving them a job and help the land by planting trees and develop a nice eco-tourism idea where everybody was a winner. At the same time I want to show as much as I could the amazing history of the island which is family heritage. The island was bought by my great, great, great grandfather [from] the Spanish crown a couple hundred years ago.”

When asked about the issues he faced in developing an ecotourism project on the island Business Owner 3 mentioned difficulties in obtaining proper development permits. There are also issues of power generation on an island with no electricity and transport to an island with no major ports, yet he claims he can overcome these issues with enough money.

Business Owner 3 cites job creation as the main benefit of ecotourism on the island. With the development of ecotourism residents have a way to earn money without “working the land and planting their food.” Employment in ecotourism has made resident aware of job options that stem from protecting the island’s natural resources instead of exploiting them. Business Owner 3 claims, “this makes them open their eyes and want to take care of the island because it is their home, job sources and life.”

4.2 Tourism employees

When asked why they decided to work in the ecotourism three answers were given. Two people saw ecotourism work as a superior alternative to logging, agriculture or fishing, while three people mentioned there were few other suitable options for employment. Others mentioned that they were involved in ecotourism because a parent was involved, with one young employee stating “my dad always worked here, so I decided to come as well. There’s little work on the island so when they built the hotel I started working here.”

All but one interviewee mentioned only positive impacts when asked how working in ecotourism has impacted their lives. The increase in income it brings through the creation of tourism related jobs was mentioned in two interviews. Three women mentioned that this is especially beneficial for women, who can now bring in money in addition to their husband’s income, allowing them to

better support their family. One woman employed at an ecolodge described the benefit ecotourism employment has brought to her life:

“Tourism is a better source of income because here both men and woman work as equals. In agriculture, fishing and logging, while our husbands chop the trees, we carry the logs and help them negotiate the prices and sell them. Now [with tourism] my husband has a job and I do too, so we have two separate sources of income.”

Tourism’s ability to benefit the island’s youth was also mentioned, with two women mentioning how the island’s children benefited from the school built by Business Owner 2’s ecolodge. One young man told the story of a tourist that came to the island when he was a child and kept in touch with him until the present day, helping him finance his studies and giving him motivation to stay in school. He expressed a hope that tourism could help other children on the island, including his own infant daughter, in the same way.

Table 14. *Responses from Ecotourism Employees: Benefits of Working in Tourism*

| Benefit | Number of Respondents (N = 8) |
|-----------------------------------|-------------------------------|
| Increased income | 4 |
| Provide jobs for women | 4 |
| Benefits for children | 3 |
| Job creation | 2 |
| Ability to support family | 2 |
| Provide business for small stores | 2 |
| Helps community (in general) | 1 |

Only one interview stated that tourism was not significantly beneficial to the people on the island because of its erratic and unstable nature. According to this young couple the income gained from tourism is not fixed enough to be a significant benefit. They hope to one day be able to start their own ecotourism business in order to have more direct control over the money they earn.

When asked how the tourism industry in Santa Maria is impacting the environment, whether positively or negatively, all but two interviews had no answers to give. The following answers were given by four participants. The other four employees could not name environmental impacts.

Two ecolodge employees had plenty of answers, many of which were based on tourism’s impact on local attitudes towards the environment and local environmental conservation. They mentioned how, due to tourism in Santa Maria, they have learned not to bathe themselves or their clothes in the lake, as

the soap they use is damaging for the aquatic environment. They state “now we have a hygiene concept. We don’t shower in the lake anymore, we have filters for water now, we learned how to properly separate waste, all of this to clean the environment.”

Four people mentioned that tourism has provided them with motivation to keep the local area clean and free of litter in order to please the tourists, and while visiting the local communities it is clear that the shores of Santa Maria have less litter than other communities around the island. Tourism has also given them a reason to minimize participation in activities which degrade the forest. The two ecolodge employees, both of whom are mothers, mentioned that tourism has also helped them educate local children on environmental conservation.

Table 15. *Responses from Ecotourism Employees: Tourism’s Impact on the Zapatera Island Environment*

| Impact | Number of respondents (N = 8) |
|------------------------------------------------------|-------------------------------|
| Motivation to keep island clean and free from litter | 4 |
| Education on how to manage waste sustainably | 2 |
| Less bathing directly in the lake | 2 |
| Environmental education for children | 2 |
| Motivation to prevent deforestation | 2 |

The future of tourism on the island was also discussed, with every participant mentioning they want to see tourism grow. One man specified he wanted to find more ecotourism work for both himself and his friends. Two women specified they want to see job opportunities for women in the tourism industry expand. One young couple wants tourism to grow, but by building their own cabins for tourism in Santolar, a community nearby to Santa Maria. No one mentioned any desire for tourism to either decrease or remain at its current level.

When asked what would be needed to increase the level of tourism on the island only three respondents could answer questions. One boat driver mentioned a need for support from an outside organization or the government, although he did not specify in which forms this support should come in. Three people mentioned that gaining some sort of English language skills would benefit the growth of tourism by allowing them to gain jobs as translators and accommodate non-Spanish speaking tourists.

4.3 Community Members Not Employed by Tourism

Each of the community members interviewed had a generally positive view on ecotourism. This occurred despite the fact that I did not purposefully seek out

those with pro-tourism beliefs for interviews. When asked if there were any limits to the amount of tourism they would like, only one person mentioned that they wouldn't want too much ecotourism if it meant damaging the environment and angering MARENA. All others who answered this question wanted tourism to develop as much as possible.

When asked what changes an increase in ecotourism could bring to their community, 10 interviews mentioned increasing incomes. Tourism job creation was mentioned in 8 interviews. One woman specific tourism's ability to create jobs for women which could be used to supplement their husband's income.

“[With tourism] we [women] would have a way to defend ourselves, to cover the household needs. Sometimes what the husband brings is not enough, especially when you have babies. Some things are covered and some are not, so we would be able to help our husbands.”

Four interviews mentioned that tourism jobs would offer an alternative to livelihood methods, such as logging, that are now illegal due to the island's national park status, two interviews mentioned that tourism work would act as a safer alternative to fishing and logging, and four interviews mentioned tourism's ability to solve the decline of the fishing industry due to overfishing issue.

“When I was a child, nobody fished. We lived out of logging. There were no laws so people would cut down the trees and sell them. Same as the lake. The trees were running out so the alternative became fishing. We jumped into the water, we became fisherman but...everything has a cost...[Now] the water resources are dying, same as fauna. There has been a rough change. Species died because they used to hunt to sell. Tigers, macaws, iguanas, armadillos. You can't find those – maybe one every now and then, but not as before. The same thing is happening with the lake now. I think that my grandchildren won't be able to fish.”



Figure 6. Fish lay out to dry on the dock in Guinea, Zapatera Island.

“I get sad and worried [when my husband and son go fishing.] I call them all the time. The weather gets bad and the water gets dangerous. The boat gets in danger, they lose their nets and risk their lives.”

One person mentioned that while tourism would be an important addition, it is not possible for it to completely replace fishing. In addition to bringing jobs and increasing income to the island’s communities, the opportunity to learn English and gain new skills from tourists, such as how to cook new types of cuisine, were listed as possible benefits.

Table 16. *Responses from Community Members Not Employed by Tourism: Possible Positive Impacts of Ecotourism Development on Zapatera Island*

| Impacts | Number of Interviews (N = 18) |
|---------------------------------------------------|-------------------------------|
| Increasing incomes | 10 |
| Job creation | 8 |
| Creation of an alternative to fishing and logging | 4 |
| Ability to learn skills from tourists | 1 |
| English language skill development | 1 |
| Job creation for women (in particular) | 1 |

Only one person mentioned a possible negative change in the communities due to an increase in tourism: a change in the island’s culture.

“[Tourism] also brings some disadvantages. For example, as farmers we like to live freely and do as we please, bathe in the lake, have the animals, pigs, chicken and cows, running around. When we talk about developing tourism, people get excited because the gringos come, leave their money and dollars here and they get happy, but afterwards, the same organization starts setting rules; we have to move our house further from here to build tourist complex, now we can’t bathe in the shore, the kid that used to run naked can’t anymore, our animals have to be locked up or eaten.”

When asked what would be needed in order to develop tourism on the island the most frequent answer was financial assistance from off the island, whether in the form of investments or donations. A few would prefer that this financial assistance only comes in the form of investments and business partners, especially from those with emotional ties to or respect for the island.

“Money is what we don’t have. We need someone who supports us economically. We barely have enough to survive.”

The second most frequent answer, given in 7 interviews, was the need for organization both within the communities and between different communities on the island. One man mentioned the need for detailed work and investment plans in order to start further developing tourism on the island.

“[We need] workshops in everything related to ecotourism because if I’m not taught how to get to a place I’ll get lost. After these, we make a work plan: what’s going to be our focus, what we are going to do, and investment plan...[We need to] organize ourselves and our time. Something very important within that is the organization of each community.”

Organization between the communities has been discussed, but as of now no significant cooperation between communities in terms of ecotourism development has occurred. One woman expressed annoyance that the communities of El Morro and Sonzapote were taught handicraft skills by an outside organization in order to aid ecotourism while other communities have been ignored.

The need to build infrastructure for the tourists, such as docks and/or houses, was also mentioned in 7 interviews. Four interviews discussed the need for education in the form of workshop and training on how to carry out ecotourism projects. Learning how to make some sort of handicraft to sell was mentioned in particular. Three interviews mentioned the need to develop language skills on the island in order to accommodate and guide non-Spanish speaking tourists. Using possible tourism jobs as motivation for the younger generation to learn English was also mentioned. One person discussed the need to advertise Zapatera Island as an ecotourism destination in order to bring people to the island.

Table 17. *Responses from Community Members Not Employed by Tourisms: Needs for the Development of Ecotourism on Zapatera Island*

| Need | Number of Interviews (N = 18) |
|------------------------------|-------------------------------|
| Financial assistance | 8 |
| Community organization | 7 |
| Infrastructure development | 7 |
| Education and skill training | 4 |
| Foreign language education | 3 |
| Advertisement and marketing | 1 |

In terms of barriers they currently face three common themes arose. The most common barrier was the feeling of hopelessness in the island's communities leading to apathy and a lack of motivation. Many on the island are tiring of people who come with promises to develop ecotourism and leave without making any real changes. Two brothers claimed these series of false promises have been happening for around twenty years.

“A while back girls from Managua came and gave us hope and other people have come but they make promises and nothing ever happens. That’s what demotivates us, false promises...When you mention tourism it would be something good to do but no, it doesn’t happen, like my father said, ‘I’m bored of this nonsense.’ That’s why we’ve had it with the false promises. They say they’ll come to start tourism and it never happens. That has been happening for 20 years.”

Four people in both Cañas and Guinea mentioned an Argentinian man who came to the island with a promise to invest in ecotourism and then left with money that was owed to them. It was difficult to get any solid information regarding this man or which organization he came from.

“The Argentinean came all of the sudden and proposed pretty things, but he brought a computer and showed us a design of the house he’ll build for tourists. He said there was someone who would help with that. The man who was going to give the money sent it, it was supposed to be a lot [of money], but apparently the Argentinean took the money and took advantage of the people here [who] are not educated...So the Argentinean was in charge of the money that came from someone that wanted to help Zapatera...At the beginning we were untrusting because we didn’t know this person and he never came back. That was not too long ago and that’s why people here are now reluctant to tourism. Promises and more promises that never become real.”

Others mentioned they felt discouraged when other communities, such as Sonzapote or El Morro, gained financial assistance that their own community did not receive. Respondents also mentioned the difficulties of dealing with increased legal restrictions on the island. Additional safety restrictions have been placed on the island's boats, such as stronger requirements for on-board lights and lifejackets. While no one challenged the need for these restrictions, two people mentioned that they are prohibitively costly. One elderly woman explained "they are taking the boats, they are demanding we put some lights and other stuff on them and we can't because we are poor." The last barrier that came up during the interview was given by one man in Sonzapote who discussed the issue of people leaving the island order to find work. According to this man, the lack of jobs pushing people to leave the island detracts from the workforce on the island available to help develop tourism.

Table 18. *Responses from Community Members Not Employed in Ecotourism: Barriers to Ecotourism Development on Zapatera Island*

| Obstacles | Number of Interviews (N=18) |
|-----------------------------------|-----------------------------|
| Feelings of hopelessness | 7 |
| Increased government restrictions | 2 |
| Migration off the island | 1 |
| No response | 10 |

Questions on how tourism could impact the environment were first misunderstood in many of the interviews, as some respondents believed I was only asking for negative impacts. After clarification, a few interviews mentioned they didn't believe tourism could have a negative impact on the island's environment, but they couldn't think of any possible positive impacts either. Two respondents mentioned the increase in waste produced by the tourists as a possible environmental issue caused by tourism, stating it will be too much to simply be burned or buried and that they would have to find a way to bring the waste off of the island.

"Now that we don't have tourists there are no plastic bags or bottles, but with tourists, lots of plastic waste comes along. All the disposable cups, plates, forks, etc. So we will need to find a way to get rid of it, possibly by sending it to the city."

In terms of positive impacts of tourism on the island, two people mentioned that ecotourism would positively impact the island's environment because the jobs it would provide would lessen the amount of logging happening on the

island. One person mentioned that tourism jobs would give the island's resident reason to only produce agricultural products for personal consumption instead of to sell off of the island, lessening agricultural impacts on the island. While one person acknowledged the fact that tourism could damage the island's environment if done improperly, he believed that the government or outside organizations could offer workshops and place restrictions in order to ensure tourism on the island is developed in a sustainable manner.

4.4 Tourists

When discussing why Zapatera Island was chosen as their vacation destination,



Figure 7. A tourists pours water on a petroglyph on Isla Muetro after being told its part of an ancient fertility ritual.



Figure 8. Tourists follow ecolodge owner on a hike to the nearby lagoon.

the British pair mentioned that one of ecolodges was recommended to them by a friend and that they saw Zapatera Island as an alternative to Ometepe Island. The Spanish tourists claimed they came because of their general affection for similar destinations.

The two tourist groups had different expectations before coming to Zapatera Island. The British tourists had very few expectations before visiting the island, although they did mention they believed it would be a suitable place for relaxation. The Spanish tourists, on the other hand, expected an area of untouched natural beauty

with a hotel that had environmentally friendly practices. They also had high expectations for the archaeological artifacts on the island.

When asked which aspects of the trip that they enjoyed, the sibling pair stated they liked that they were not staying at a large resort and that the ecolodge employed and benefited local people. They also enjoyed the fact that their trip

was all inclusive. The enthusiasm of their guide, Business Owner 1, was also mentioned. The Spanish tourists liked that the money they spent would benefit the local community through the people employed by the hotel as well as island's natural beauty.

The topic of what they would have changed about their trip evoked far fewer responses, as both groups were overall pleased. The British sibling pair mentioned only the rustic plumbing situation. The Spanish tourists would have liked to see more involvement with the island's communities. They expressed disappointment that they weren't taken to the communities that make handicrafts to sell to tourists or offered any to buy at the hotel.

“We would have loved to see their work and buy from them. They should bring it here, organize a day within your vacation, saying ‘tomorrow from 11 o’clock to 12 o’clock you’ll have the women from the communities show their work in case you are interested in purchasing.’”

One man in the group mentioned his desire to get more involved with the local communities in terms of seeing how they live their lives and having the opportunity to take part in any possible projects they were undertaking.

“That is something that I missed at this place. There is another place in Nicaragua called the Solentiname Islands, one of the attractions there is the easy access and close contact you have with the families on the island, so you get to see their work. Walking around the community you see their art, their artisanal work and eventually you can get involved and purchase it. That enriches the visit, you feel much more in touch with the visit, you can learn how they live, build your judgement, relate to the people.”

The entire Spanish group agreed they also would have liked a more knowledgeable guide when visiting the petroglyphs of Isla Muerto, as they believed they couldn't fully appreciate what they were seeing due to a guide uneducated in the petroglyph's meanings.

4.5 Ministry of Natural Resources and Environment (MARENA)

The MARENA representative described MARENA as a ministry dedicated to the protection and restoration of natural resources both on the national and departmental level. Protected areas which are developed to conserve biodiversity within the Mesoamerican corridor are prioritized. On Zapatera Island MARENA works with local community members to develop zoning regulations. This way

the community is involved in the decision to dedicate certain areas to various activities. She emphasized the fact that these decisions are made through cooperation between MARENA and the local communities.

MARENA's current projects on the island were also discussed. MARENA is currently working with eight women to teach them beekeeping skills. There is a power station construction project for families that rely on firewood. MARENA is also involved in environmental monitoring, alongside the navy and police. This monitoring tracks any alterations to the terrestrial and aquatic ecosystems as well as any possible contamination to the soil or water.

There is one park ranger living and working on Zapatera Island. The ranger works for 22 days on the island, after which he gets eight days off. He is responsible for inspecting, monitoring and identifying any possible damage to the island's natural resources as well as enforcing rules and regulations.

All ecotourism projects being planned for Zapatera Island must first be approved by MARENA. Once the project plan is submitted to MARENA, MARENA reviews the project to see if all the requirements are fulfilled. The plan is then analyzed to see which impacts the project could have on the environment. The representative used the example of a hotel – MARENA would need to consider every aspect of the project, such as what materials will be used to build the hotel, what will be done at the hotel once it is built, etc. In addition, the social impact of the project is relevant to the approval process.

MARENA is responsible for the environmental education of the local communities when a project is developed and accomplishes this through a shared responsibility approach. MARENA authorizes a project to develop the environmental education plan for the community that will be impacted. In this way MARENA and the organization developing the ecotourism project share the responsibility of developing an adequate environmental education plan.

When asked about MARENA's involvement with ecotourism, the MARENA representative reiterated their involvement through the approval and authorization process each project must go through. Ecotourism is seen in a positive light due to the fact that the development of ecotourism can lead to jobs for the local communities, which then leads to less pressure on the local ecosystem through other jobs that rely on environmental degradation or extraction, such as logging. MARENA sees ecotourism as an environmentally friendly form of economic development and the department works closely with INTUR, as the ecotourism projects must be authorized by both departments.

5 Discussion

When analysing the results it is clear to see an overarching positive view towards ecotourism development on the island. With significant ecotourism research outlining the various failures of ecotourism, the lack of a single respondent with an overall negative attitude towards tourism is surprising.

The positive attitudes of local community members towards ecotourism development on Zapatera Island and its ability to benefit the island's environment and communities' seems to stem from an idealistic view of ecotourism. There was a significant lack of interview participants able to discuss possible negative impacts of ecotourism or what needs to be done in order to start ecotourism development. Few people could name ways in which ecotourism could detract from the island, and the idea that once they receive funding they'll be able to easily begin development was prevalent. For much of the community ecotourism seems to be seen as a panacea – a cure-all for the poverty, unemployment rates, lack of education, environmental degradation and other issues faced on the island. Those involved with ecotourism had a more balanced view on the obstacles ecotourism development on the island faces.

The common theme of ecotourism as a panacea exemplifies a basic lack of experience and knowledge regarding the complexity of ecotourism development and its possible impacts and barriers. This in and of itself is of significant importance and must be addressed in future recommendations.

5.1 Possible Benefits of Tourism on Zapatera Island for Conservation and Sustainable Development

Much research has been done on the possible benefits of ecotourism on environmental conservation and the development of local communities. Ecotourism initiatives that are undertaken in a sustainable manner with the direct involvement of the local communities in all stages of the initiative has the possibility to bring multiple benefits, both social and economic, to Zapatera Island. Unfortunately, the current state of ecotourism on Zapatera Island relegates community members living on the island to employee positions for ecotourism business set up by wealthier land owners who live in mainland Nicaragua with historic family ties to the island. In order to obtain these social and economic benefits the ecotourism sector on Zapatera Island needs to shift to a sector more inclusive of the direct involvement of community members during all aspects of the ecotourism process.

Interviews with ecotourism employees and business owners offer a direct insight into the impacts current ecotourism has already had on the island and the

local community. Responses given by those not currently employed in ecotourism demonstrate the possible benefits those with little exposure to ecotourism are already aware of and concerned about. Possible benefits that are prominent in ecotourism research but rarely mentioned by interview respondents, such as community empowerment, is equally telling. Infrequently mentioned benefits are either not noticed by community members and ecotourism business owners on Zapatera Island or are benefits that may not be relevant to ecotourism on Zapatera Island.

Outlining the possible benefits of ecotourism on Zapatera Island creates a springboard in which to discuss whether or not ecotourism development can lead to viable natural resource management and livelihoods. By discussing the benefits we see that properly managed ecotourism that ensures sustainable practices while promoting the active involvement of community members could positively impact conservation and sustainable development on the island. We can then take these benefits and compare them to the challenges and barriers Zapatera Island ecotourism development will possibly face.

5.1.1 Job Creation and Alternative Livelihoods

The ability of ecotourism to provide an employment alternative to the traditional logging, fishing and agriculture was one of the most mentioned benefits of ecotourism on the island. Business Owners 1 and 3 cited sustainable job creation for the local community members as a motivation for creating their ecotourism business, and community members around the island expressed an interest in replacing the island's current extractive livelihoods with ecotourism.

Critics of alternative livelihood projects state alternative livelihood projects are based off the flawed assumption that people will reduce their extractive livelihood practices when given a more sustainable option, and that this is not always the case (Wright et al., 2015). Yet many respondents claimed they would prefer ecotourism to activities such as fishing for various reasons. Fishing is one of the main economic activities on the island currently, yet overfishing means boats need to fish deeper in the lake, making their fishing trips longer and more difficult without any significant increase in economic impact. The idea that community members would drop their fishing poles to join the ecotourism industry if given the chance was commonplace.

Job creation through ecotourism can benefit Zapatera Island's conservation and sustainable development. The three ecotourism businesses on the island already provide some jobs. Additional ecotourism around the island could increase job creation, expanding it to communities outside of Santa Maria. Ecotourism can also create a ripple effect in job creation on Zapatera Island. As ecotourism employees earn money they will be able to spend more money on

services and goods on the island, bringing more money into the island's economy.

Two female housekeepers in Santa Maria discussed ecotourism's ability to create jobs for women who were essentially barred from entering other industries, such as fishing. Women not currently involved in ecotourism also cited job creation for women as a possible benefit of ecotourism. The addition of a second income into a household with the development of ecotourism can help bring in enough income to make ecotourism employment an economically viable alternative to environmentally degrading activities.

Of course, it is unrealistic to believe that ecotourism could act as the sole livelihood option on Zapatera Island. Business Owner 1, for example, only employs between 3 to 5 employees at any given time, including those that are paid for short term tour guide or transportation work. Therefore we can not expect every person currently engaged in an extractive livelihood method to be able to find work in the ecotourism sector. The use of ecotourism as an alternative livelihood technique would need to be combined with other sustainable natural resource management techniques, although this was not brought up by any research participants during their interviews.

5.1.2 Development of Physical and Social Infrastructure

With the exception of the two ecolodges in Santa Maria there is no plumbing on the island. Minimal electricity is provided by small solar panels. Almost everyone on Zapatera Island bathes themselves and washes their clothes in Lake Nicaragua. The soap enters straight into the lake without any sort of treatment. During the MARENA interview this was mentioned as one way the marine ecosystem of Lake Nicaragua is being contaminated. Wood harvested on the island is used as fuelwood, contributing to deforestation. Simple pit toilets are used around the island. Trash is either burned or buried.



Figure 9. Washing stations at Guinea.



Figure 10. A typical pit toilet in El Morro.

The island would need to see the development of its physical infrastructure in order to become a viable ecotourism destination for anyone but the most rugged ecotourists. By providing the basic comforts to tourists, such as reliable plumbing and electricity, the island could become desirable to both hard and soft ecotourists who require a higher level of comfort (Singh, Slotkin and Vamosi, 2007). This can be seen in the interview with the British sibling tourists, who had no complaints about their trip apart from the low level of plumbing infrastructure. Basic plumbing, as exemplified by ecolodges in Santa Maria, would need to be installed. Sustainable energy provision would need to be developed in order to power tourist housing. While this infrastructure would be developed for the purpose of strengthening the island's ecotourism offers and attracting ecotourists, efforts could be made to ensure the infrastructure benefits multiple people on the island, not just those involved in ecotourism. With improved infrastructure communities can begin to practice more sustainable activities in their everyday life, such as sustainable forms of washing clothes, cooking food, and handling of waste products.

Despite the benefit this could have both towards conservation and community development, it was not mentioned in many interviews as a possible benefit. Those who did mention it were business owners or ecotourism employees. In the case of the ecotourism employees, this could be due to the fact that they realized the benefit of developed infrastructure once they were personally introduced to it.

Ecotourism development on the island would also benefit the social infrastructure on Zapatera Island, such as health care services and education. The Denis Martínez School in Santa Maria is the perfect example of how ecotourism funds can help develop the island's education infrastructure. Through informal conversations on the island I heard stories of lacking childhood education. One mother complained that teachers would come and go, leaving the community's children without a teacher for a significant amount of time. Yet some of the money from Business Owner 2's ecolodge goes into the school in Santa Maria, directly impacting the quality of education on the island. During an interview with three teachers at the school they claimed increased tourism would bring further benefits to the children of the island. They outlined the school's current needs – additional classrooms, chalk boards, and computers – and the hope that future tourism could help them obtain these items.

5.1.3 Empowerment

No interviews mentioned a sense of empowerment emerging from ecotourism development on the island. While no reasoning for this was uncovered in the literature review, one could theorize that this could be due to the fact that the

concept of empowerment was not known by that name to the research participants. Aspects of empowerment, such as feeling like one has proper political representation and having positive hope for the future, was still mentioned in the interviews. Ecotourism research shows us that while empowerment of communities may not be identified as a main motivation for communities to develop ecotourism, it is a significant positive impact.

Using Scheyvens' empowerment framework we can analyse the ways in which community members on the island could become empowered through ecotourism development (Scheyvens, 1999). Community members can become economically empowered when they access a sustainable source of income through ecotourism, as long as these economic benefits are shared equitably and effort is put in to reduce shocks and seasonality associated with the ecotourism industry. A successful ecotourism project carried out with active participation from the community members can finally tackle the issues of hopelessness experienced by many of the community members. Ecotourism development can give a sense of optimism that was not found in the interviews.

Successful ecotourism development through the organization of the various communities around the island can help build a sense of social cohesion. Few residents described Zapatera Island as a single cohesive unit, instead focusing solely on their respective communities. This cohesion can lead to political empowerment, where communities around the island feel they have proper representation and are respected members of the decision making process.

Empowerment can allow the residents of Zapatera Island to better manage continued ecotourism development. An empowered Zapatera Island will feel confident in working with MARENA, INTUR, and NGOs, be optimistic about their future as a community, and be better prepared to face any negative impacts of ecotourism.

5.2 Barriers to Ecotourism Development on Zapatera Island

Development of ecotourism on Zapatera Island does have the ability to positively impact the island's environment and local communities in a myriad of ways, yet it is important not to overlook the obstacles that must be tackled first. Obstacle can either come in the form of barriers to initial development, or detrimental effects of ecotourism if it is developed in an unsustainable manner. Failure to confront these obstacles will lead to ecotourism that is either not beneficial or even detrimental to the island.

Most people interviewed amongst the various groups were aware of the obstacles they face in terms of developing ecotourism. This most likely stems

from stories of or experiences with previously failed attempts to develop ecotourism on the island.

5.2.1 Lack of Educational and Skill Capacity

A lack of funding for ecotourism projects was the most cited barrier to ecotourism projects from amongst the community members, yet funding will do nothing for ecotourism development on the island without proper capacity building. Research shows us that capacity building is a necessity for successful ecotourism development with an equitable distribution of benefits (Stradas, Corcoran and Petermann, 2007; Wearing and Neil, 2009; World Wildlife Fund International, 2011, Dogra and Gupta, 2012). One could argue the reason only 4 out of 18 interviews with community members not employed in ecotourism cited lack of education and skill capacity as a barrier to ecotourism is an issue of a lack of knowledge and experience itself. It's hard to know what you don't know.

Job creation was by far the most frequently cited benefit of ecotourism development on Zapatera Island. Without proper training most community members will be relegated to unskilled jobs. Without language skills it will be difficult to act as a skilled tour guide to non-Spanish speaking ecotourists. A community without ecotourism management skills will not be able to develop their own community-led ecotourism or tourists housing. Without these skills any increased ecotourism development will require a trained labor force from off the island, significantly promoting the leakage of benefits off of the island and away from local community members and increasing the island's population.

A lack of education and skill capacity does not only involve community members. Government officials in charge of working on natural resource management on Zapatera Island are not trained in community participation and sustainable development. Without these skills co-management of ecotourism development will be nearly impossible, and the government leaders will not be able to successfully integrate participation in to their management plans. Without this education, ideas like co-management and participation will be used more as buzzwords than actual methods carried out by the resource managers.

5.2.2 Cultural Barriers

Only one community member discussed possible issues caused by the clashing of various cultural values between tourists and community members. While one would hope ecotourists visiting the island would practice a proper amount of respect to the culture of the local communities, as is required in ecotourism, their own skills and values may clash with that of the island's residents.

The perfect example of this can be seen in the lack of bathing suit use amongst the island's residents. Daily bathing in the lake is done while fully

clothed. In Guinea I swam with a group of girls who were all still clothed in the same clothes they had worn all day. I kept my clothes on as well in order to fit in with the community, yet my translator revealed a two-piece bathing suit before swimming. This act was shocking to the girls, who covered their eyes as they giggled amongst themselves.

Getting used to tourists in bathing suit is far from a major issue. A housekeeper in Santa Maria claimed people who are frequently around tourists quickly get used to it, and she has even bought a bathing suit for her daughter. Yet there are cultural differences that may cause more serious conflicts between the community members and ecotourists, especially when the personally conflict against the communities cultural values.

The idea of community members washing their clothes directly in the lake may clash with conservation-minded ecotourists, yet this practice is a large part of the island's culture. The animals walking around the island's communities could also act as a cultural barrier. Around the island you can find dogs, pigs, cattle and horses owned by various community members. Many of these animals appear to be severely underfed, a grievous sin in many developed countries' culture. What was so shocking to my translator and I was commonplace for



Figure 9H. An underfed dog in Cañas.

people on the islands, with one 8-year-old casually telling me how many piglets die because they can't compete with the older pigs for food. A cultural clash could emerge from tourists not understanding how the island's residents could allow their animals to be so mistreated, while community members could possibly not understand how tourists seem to care so much for the creatures they only keep around for food or a source of income, especially when community members themselves

are struggling to feed their families.

5.2.3 Lack of Motivation of Community Members and Government Officials

Many community members discussed feelings of demotivation and hopelessness when it came to tourism development due to previous failures in ecotourism development. The "Argentinian man" was spoken about with an almost legend-like quality, as if representing all of the betrayal felt when another ecotourism development plan failed to pan out. A belief that another attempt to

develop tourism with the help of an outside organization would only lead to more disappointment has led to a situation where community members are beginning to give up on the possibility ecotourism development. Many community members discussed the successful ecotourism business in Santa Maria as an increasingly unreachable goal that they will never be able to reach in their own communities. This demotivation is understandable but if it stops them from taking advantage of any opportunities to participate in the ecotourism development process it could hinder truly participative ecotourism development on the island. While one might ask why these community members wouldn't simply work with the successful ecotourism businesses instead of developing their own ecotourism projects, it is important to remember that these communities are separated from each other both due to geographic isolation and a lack of reliable communication technologies.

MARENA, INTUR and other government agencies seem to lack motivation or ability to promote and develop Zapatera Island as an ecotourism destination, despite community interest. The current involvement of MARENA in regards to ecotourism development on the island is as an authority to authorize any ecotourism project brought to them, and INTUR does not currently seem to have any dedicated plans for Zapatera Island. This technique does not encourage participation amongst the local communities, which need more than authorization of ecotourism plans to develop a community-based ecotourism project. Without assistance from INTUR the communities have little chance to develop any projects for MARENA to approve. Without the motivation of Nicaragua's government agencies there's little hope for change on the island.

5.2.4 Lack of Visitation

Business Owner 1 acknowledged a lack of visitation as the greatest barrier to further ecotourism development. This sentiment is supported by a lack of visitors in Sonzapote. A community leader in Sonzapote explained that brand new tourist housing built in the community has not yet received any tourists. Zapatera Island has potential as an ecotourism destination in terms of natural and cultural attractions. Despite this potential, it is not well known in the tourism market. As you walk the streets of Granada you find small travel agencies promoting trips to Nicaragua's tourist mainstays – San Juan del Sur, Ometepe Island, and León. After walking down the main street I did not find a single mention of Zapatera Island, despite Granada's proximity to the island.

If tourists are not aware of Zapatera Island's status as an ecotourism destination, ecotourism development will never become a vital source of conservation and sustainable development. Sustainable ecolodges can be built in

every community, yet without visitation the possible benefits of ecotourism will fail to materialize.

It is important to acknowledge Zapatera Island's designation as a national park and protected area. While developing a steady stream of ecotourist visitors to the island will benefit ecotourism development, it must be done in a way that ensures the protection of the island's ecosystem and upholds the ideals of a protected area dedicated to environmental conservation.

5.3 Recommendations for Ecotourism Development on Zapatera Island

After taking into account the opinions and attitudes of various stakeholders towards ecotourism development on Zapatera Island specific needs for ecotourism development emerge. These recommendations, which will hopefully be of value to academics, Nicaraguan government industries and community members alike, should always begin with participative conversations amongst the stakeholders. This will ensure the actions being undertaken are desired by the stakeholders and representative of the stakeholders' plans and wishes.

5.3.1 Participation and Co-Management

While ecotourism currently works on the small scale in Santa Maria, without the utilization of co-management and an emphasis on participation amongst all stakeholders it is unlikely that it can act as a viable sustainable natural resource management practice for a significant portion of the island. There are currently three ecotourism businesses in Santa Maria, yet those are run with only a minimal amount of community participation, with community members acting only as employees and not as true partners in further ecotourism development. By increasing participation amongst all stakeholders the varying strengths and weaknesses of the stakeholders in terms of ecotourism development and management can be balanced⁵ (UNEP, 2002).

In order to encourage participation open lines of communication between the stakeholders must be developed. Research participants discussed an open line of communication existing only when academic researchers are present on the island to develop it. According to the fieldwork, these lines of communication fade as soon as the researchers leave. The issue of communication only happening with direct pressure from academic researchers is an issue that must be overcome.

Communication can happen in the form of regular meetings on the island where representatives of all stakeholder groups are invited to discuss issues

⁵ See Table 4.

regarding resource management and ecotourism development. Special attention should be paid to the social empowerment of local community members in order to prevent further feelings of hopelessness and apathy, such as the hopelessness and apathy expressed during the conversations regarding the “Argentinian man”.

5.3.2 Capacity Building

Capacity building needs to be undertaken for community members, ecotourism business owners and government resource managers. During the interviews with community members not employed in the ecotourism industry, a necessity for capacity building in terms of language, cooking and tour guiding skills was discussed. The interview with Business Owner 1 also identified the benefit of obtaining training in cooking and food safety skills for his employees. Capacity building will give all involved stakeholders the various skills needed to take part in ecotourism development on Zapatera Island in a participative and sustainable manner.

Community members should have access to training in ecotourism business skills, such as tour guide, handicraft creation, cooking, customer service and language skills. Research shows that without this training community members will be relegated to low skill work with fewer benefits, while high skill jobs will be held by foreign employees (Tosun, 2000, Stradas, Corcoran and Petermann, 2007; Novelli and Gebhardt, 2009; Razzaq et al., 2012; Kim, Park and Phandanouvong, 2014; Das and Chatterjee, 2015a; Das and Chatterjee, 2015b). Environmental education should be tied to this, training community members in sustainable resource management practices and lifestyle choices, such as not leaving litter on the shore and how to properly manage waste. This training can be done through partnerships between NGOs and existing ecotourism businesses on the island in order to make use of the skills already held by the ecotourism business owners and employees.

Ecotourism business owners should receive training in marketing skills. They can then use tourism marketing to make a name for Zapatera Island as an ecotourism destination in the international tourism market. This could be done through partnerships with NGOs, INTUR, or academic institutions.

Government resource managers would benefit from capacity building in participative management techniques in order to ensure they have the skills to carry out successful co-management projects on Zapatera Island.

5.3.3 Funding and Financial Services for Community-based Projects

Without funding community members have no hope of developing an ecotourism project where they have any real amount of control or ownership. Funding can come from government grants, NGOs, private investors or

microfinance initiatives. It is important to ensure whichever method chosen is acceptable for the skill levels of the community members involved and is tied to capacity building. Special attention must be paid to financial services that can be utilized by residents who do not own the land they live upon, as this is the situation of a majority of the community members. Capacity building in addition to the funding will not only provide Zapatera Island's with financial support to fund community-based ecotourism project but with skill training to increase the chances that this project will be successful.

5.3.4 Inter-Community Organization

Communities around the island are missing out on valuable resources by not having a dedicated ecotourism organization between the communities. While discussing the lack of organization within the Zapatera Island communities in regards to ecotourism development, one community member mentioned the lack of organization and how it affects capacity building. She stated a desire for more developed organization in order to learn skills found in other community, such as handicraft skills taught to the communities of El Morro and Sonzapote. Any possible community-led ecotourism development project will be stronger when the communities combine their resources, whether it be skills in handicraft creation, a particular community member experienced in ecotourism development, or a high quality tourist attraction, and work together. During their interviews the tourists were disappointed by the fact that they couldn't see other communities on the island. By organizing in this manner the tourists are not only satisfied but tourist's stay on the island will be longer, increasing the amount of money being brought into the economy. Organizations from off the island, such as a MARENA, INTUR, a NGO or academic institute could assist in initiating this organization.

Inter-community organization must be developed in a way that tackles the issues of isolation faced by the communities. Zapatera Island communities are located around the perimeter of the island and are only accessible by boat. Any attempt to conduct a meeting with members of various communities can be hindered by a lack of access to boats or gasoline or inclement weather making the journey unsafe. Community isolation must be overcome in order to develop suitable inter-community organization. Community members did not bring up the issue of community isolation and its ability to hinder inter-community organization explicitly during the fieldwork. Yet there were discussions of isolation in terms of not being able to afford to send children out of the community for school or visit family in other communities. In fact, whenever I paid someone to take me to another community via boat there were community

members asking if they too could ride in the boat, as they didn't have the financial means to hire their own boat.

5.3.5 Marketing

Zapatera Island has a lot to offer ecotourists in the form of cultural artifacts, wildlife viewing, artisanal fishing, gorgeous views and friendly people. Without marketing of the island the island will continue to attract minimal amount of tourists.

Marketing should be done through diverse marketing streams, many of which can be done for low cost or free. Internet based advertisements, such as through social media campaigns, is a low cost way of attracting ecotourists. Specialized marketing will help attract a specific type of ecotourists. For example, Zapatera Island can be marketed as the unexplored neighbor of Ometepe Island.

Business Owner 1 discussed his attempts to increase marketing for the island. He stated that it is difficult to market a business that isn't in one of the well-known tourist destinations in Nicaragua, such as Ometepe Island or Granada. He believes that the reason the island is not getting more tourists is that tourists that visit Nicaragua do not know Zapatera Island exists. Many of Business Owner 1's future plans involve further marketing of his ecotourism business and Zapatera Island as an ecotourism destination in general.

With INTUR investing more in the marketing of tourism to foreign markets it is crucially important to market Zapatera Island as an ecotourism destination and attract some of the foreign visitors these marketing campaigns are sure to attract.

5.3.6 Environmental Monitoring

A solid environmental monitoring program on the island is desperately needed, and should begin as soon as possible. During the literature review stage of this study it was nearly impossible to find any sort of background data on the island's environmental state, such as levels of biodiversity or deforestation. Even asking the MARENA representative during the fieldwork did not produce any data. During an informal conversation with Business Owner 1 he stated that the island could use monitoring but it is prohibitively expensive for him to fund it on his own. He used the example of jaguars on the island. Literature on Zapatera Island states there are jaguars on the island, but Business Owner 1 states he has never seen one and doesn't know anyone who has. He was in conversation with a research group that was willing to set up camera traps around the island in order to discover if any jaguars still exist and at what level, yet in order for this to happen Business Owner 1 would have to feed and provide lodging for the research group during their time on the island.

Monitoring before the expansion of ecotourism development on the island allows for the creation of baseline data. Once this baseline data is gathered continuous or regular monitoring and environmental analyses projects will need to be undertaken. By comparing monitoring results to baseline data the impact of ecotourism development on the island's environment can be established

Environmental monitoring can be carried out by different actors. MARENA is already involved in some environmental monitoring carried out by a ranger located on the island, but other stakeholders can get involved in order to broaden Zapatera Island's pool of monitoring data and increase stakeholder participation.

Zapatera Island would benefit from the development of a community-based monitoring (CBM) project. Training local community members in environmental monitoring techniques, such as through environmental surveys or observation forms, would increase the level of community participation and act as a form of capacity building. Local community members would become partners in research on the island. This can also give community members first hand insight into how they're impacting the environment. CBM monitoring could provide Zapatera Island and resource managers with a cost effective form of environmental monitoring, and partnerships with academic institutions could ensure community members are taught appropriate monitoring methods that will allow data gained to be used by government resource managers.

5.3.7 Management of Expectations

When discussing the possibility of using ecotourism as a natural resource management practice to aid in Zapatera Island's conservation and sustainable development it is important that expectations are managed. When talking about ecotourism many community members discuss it as if it were a cure to all the issues faced by communities on Zapatera Island. While well-managed ecotourism development could have many positive impacts on the island, it is important that everyone is realistic about how great of an impact it can have. Ecotourism is not a panacea, and putting all effort into developing ecotourism on the island would do more harm than good.

Community members needs to be made aware of the realistic benefits of ecotourism as well as the possible, and likely, issues that will be faced during the development. This can help prevent the feelings of betrayal and hopelessness expressed by community members. Existing ecotourism research shows us that while ecotourism can provide benefits to conservation and sustainable development, it cannot be used as the sole management practice. Expecting ecotourism to solve all the problems shuts the door to diversification and other possible management practices and puts the island at risk of factors that can

quickly damage the ecotourism industry, such as recessions, natural disaster and conflict.

6 Conclusions

Ecotourism has the ability to contribute to Zapatera Island's natural resource protection and sustainable development through alternative livelihood creation, infrastructure development and empowerment of the local communities. Yet this can only happen with a realistic acceptance of what is possible with the resources available. Participation must also move beyond the current situation on Zapatera Island where local community members are only involved in the ecotourism sector as employees in ecotourism businesses run by land owners who live off the island with no involvement in the actual ecotourism development.

By combining inputs from ecotourism business owners, ecotourism employees, community members not employed by tourism, tourists, and MARENA this study is able to offer a conceptualization of the current state of ecotourism development on Zapatera Island that involves the input of varied stakeholders as well as the steps that need to be taken to ensure its success. The significant inclusion of community members aware of ecotourism but not employed in the industry was particularly valuable. Many ecotourism studies research how communities are impacted by the development of ecotourism. This study goes beyond that, offering a glimpse into the attitudes and apprehensions of community members aiming for ecotourism development despite existing barriers.

Further research would greatly benefit the study of ecotourism development as a contributing factor to conservation and sustainable development on Zapatera Island. More in depth analysis of previous failed or failing ecotourism attempts on the island would provide knowledge of what has not worked for the island in the past. Psychological studies on the impact of feelings of hopelessness on community project development, empowerment and ability to work with outside organizations would help develop an area of ecotourism research not frequently studied. Lastly, studies on the sustainability and environmental impacts of current ecotourism businesses on the island will show whether or not the tourism currently taking place on the island can be considered ecotourism and what implications this has for future ecotourism development.

This study will hopefully go on to provide Zapatera Island with a valuable resource that can be utilized for future ecotourism development. While ecotourism development on the island faces significant obstacles, with proper development and management, which involves participation of varied stakeholders including local community members, capacity building, funding for ecotourism development, inter-community organization, marketing of Zapatera Island as an ecotourism destination, environmental monitoring and management of expectations, the benefits of ecotourism on Zapatera Island

towards conservation and sustainable development on the island could be even more significant.

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8 Appendix

Table 19. *Initial Interview Questions*

| Group | Questions |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ecotourism Business Owners | ➤ What made you choose to participate in ecotourism? |
| | ➤ What issues did you face when developing your ecotourism business on the island? What issues do you currently face? What would you need to resolve these issues? |
| | ➤ How involved are local communities in your ecotourism business? Are there plans to increase community involvement? |
| | ➤ What plans do you have to further your ecotourism business? |
| | ➤ Are there any plans in place to ensure ecotourism on the island positively impacts the local communities? |
| | ➤ What changes have you seen on the island since the introduction of ecotourism? Have there been any changes in regards to the attitudes of the local communities towards tourism or environmental changes? If so, what? |
| Ecotourism Employees | ➤ What made you choose to participate in ecotourism? |
| | ➤ What changes have you seen on the island since the introduction of ecotourism? Have there been any changes in regards to the attitudes of the local communities towards tourism or environmental changes? |
| | ➤ Has working in the tourism industry significantly impacted your life? If so, how? |
| Community Members Not Employed in Ecotourism | ➤ How do you feel about the arrival of tourists currently on Zapatera Island? |
| | ➤ Have you attempted to get involved with ecotourism? |
| | ➤ What changes do you believe tourists/tourism would bring to your life? To your community? |
| | ➤ Have you noticed any changes since the arrival of ecotourism on the island? |
| | ➤ What would you or your community need in order to take part in ecotourism? |
| | ➤ How would ecotourism development impact you or your community? |
| Tourists | ➤ What made you choose to visit Zapatera Island? |
| | ➤ What expectations do you have for your trip? How have your expectations been met? |
| | ➤ How much do the following factors matter when choosing to visit Zapatera Island? Cultural artifacts, nature (flora and fauna), involvement of local communities, sustainability of the ecotourism business, the variety of activities offered, other factors? |

| <i>Group</i> | <i>Questions</i> |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MARENA | <ul style="list-style-type: none"> ➤ What plans does MARENA have to encourage ecotourism on Zapatera Island, if any? ➤ Has MARENA been involved in ecotourism projects within Nicaragua? What about on Zapatera Island? ➤ Does MARENA see the development of ecotourism as an alternative way for Zapatera Island communities to earn an income outside of logging and fishing? ➤ What obstacles need to be overcome in order to use ecotourism as a sustainable natural resource management practice on Zapatera Island? ➤ Are there any plans in place to ensure ecotourism on the island positively impacts the local communities? ➤ How much collaboration is there between MARENA and INTUR? ➤ How many rangers currently work in Zapatera Archipelago National Park? Are there any plans to add more? ➤ What are the rules regarding use to forest resources, i.e. fauna, logging resources, etc. ➤ How are the marine resources of Zapatera Archipelago National Park protected? ➤ What environmental monitoring is being done on Zapatera Island and in Lake Nicaragua? Are there any plans to increase this monitoring? |