



Turneffe Atoll, Belize:

Balancing Sustainable Tourism & Commercial Fishing In a Marine Protected Area (MPA)

Prepared by:
Center for Responsible Travel (CREST)



Prepared for:
Turneffe Atoll Trust



January 2013



Acknowledgements

The Center for Responsible Travel (CREST) Co-Director Martha Honey, Ph.D. wrote this report, based on a site visit and interviews in Belize City and at Turneffe Atoll and a review of a wide range of primary documents, academic studies, articles, and websites from Turneffe Atoll, Belize, and around the world. The documentation was assembled by a team at CREST: Catherine Ardagh, Kyle Hook, and Naomi Garner. They also researched key questions posed by the author regarding marine parks, atolls, and sustainable tourism. Kyle Hook oversaw the final edits and layout. The final report was reviewed by CREST Co-Director William H. Durham at Stanford University.

CREST would like to thank the Turneffe Atoll Trust for commissioning and financing this study. Craig Hayes, the Trust's Board Chairman and owner of Turneffe Flats Resort, provided invaluable background materials about Turneffe, organized the site visit and interviews in April 2012, and carefully reviewed the final draft.

Table of Contents

Executive Summary	1
1. Introduction	10
2. Turneffe Atoll Today.....	11
□ Commercial Fishing.....	12
□ Tourism Activities: Diving, Sport Fishing and Ecotourism.....	14
□ Resorts and Other Developments at Turneffe Atoll	19
□ Impact of Coastline Tourism on Mangroves	23
3. Turneffe Atoll Marine Reserve	24
□ Case Studies of Other MPAs.....	28
□ Marine Protected Areas in Belize	29
□ Chumbe Island Coral Park, Zanzibar.....	30
□ Cabo Pulmo National Park, Mexico	33
□ The Maldives	37
□ Lessons for Turneffe Atoll Marine Reserve	40
4. Ensuring Sustainable, High Value Tourism at Turneffe Atoll	43
□ Tourism in Belize.....	43
□ Turneffe and Global Tourism Trends.....	45
□ Consumer Support for Sustainable Tourism.....	47
□ Profile of Conscientious Travelers	51
□ Ensuring Sustainable Tourism at Turneffe Atoll	53
5. Conclusion	58
About the Center for Responsible Travel (CREST)	61
List of References	62

Figures & Maps

Map 1 Belize.....	9
Map 2 Turneffe Atoll.....	10
Figure 1 Turneffe Atoll Lobster Production, 2004-2009.....	14
Figure 2 Turneffe Atoll Conch Production, 2004-2009	14
Figure 3 Turneffe Atoll Direct Economic & Value Added Impacts.....	16
Figure 4 Tourist Numbers & Expenditures at Turneffe Atoll.....	17
Figure 5 Land Ownership at Turneffe Atoll.....	22
Figure 6 Turneffe Atoll Marine Reserve Management Zones.....	28
Figure 7 Overnight Tourism Arrivals in Belize.....	45
Figure 8 Cruise Passenger Arrivals in Belize.....	45

Turneffe Atoll, Belize:

Balancing Sustainable Tourism & Commercial Fishing In a Marine Protected Area (MPA)

Executive Summary

The Belize government's official declaration on November 22, 2012 of the Turneffe Atoll Marine Reserve marked the successful culmination of nearly two decades of highly participatory efforts to put the last remaining atoll in the Belize Barrier Reef System under significant protection. Turneffe Atoll is an integral part of Belize's reef system as well as a global "hot spot" for marine biodiversity. This analysis, by the Center for Responsible Travel (CREST), examines key issues facing the new 325,000 acre Marine Reserve and the Reserve's two main economic sectors: commercial fishing and tourism. The study was funded by Turneffe Atoll Trust to better understand these issues.

The purpose of this analysis is twofold: 1) to determine measures for building a successful Turneffe Atoll Marine Reserve that ensures sustainable tourism development and a sustainable commercial fishery, and 2) to analyze the potential for synergies between the Atoll's tourism and commercial fishing sectors. As part of its research, CREST visited all of Turneffe's tourism facilities and interviewed dozens of tourism, commercial fishing, research, and educational stakeholders from the Atoll. CREST also reviewed a wide range of pertinent scientific information from Turneffe, and elsewhere in Belize, as well as from other Marine Protected Areas (MPAs) around the world.

Our findings demonstrate that carefully managed ecotourism and well-regulated commercial fishing both contribute significantly to the success of MPAs. In contrast, large-scale, improperly-planned tourism development and poorly regulated commercial fishing damage fragile marine and terrestrial ecosystems leading to ineffective MPAs. The analysis concludes that Turneffe's ecotourism and commercial fishing sectors share common interests in protecting the Atoll's natural resources and that there is significant potential for synergy between these two key stakeholder groups. Active involvement of both commercial fishermen and ecotourism operators will be critical to the long term success of the Reserve.

A Sustainable Turneffe Atoll is Economically Important

As the largest and most biologically diverse coral atoll in the hemisphere, Turneffe contributes significantly – some US\$62 million per year – to Belize’s economy. Approximately US\$38 million of this amount is related to protection from hurricanes for mainland Belize, particularly Belize City, provided by Turneffe Atoll. The remainder of Turneffe’s economic activity is generated by tourism and commercial fishing.

Turneffe Atoll has historically been a major contributor to Belize’s commercial harvest of conch, lobster and finfish. Over the past decade, Turneffe’s production of conch and lobster has declined, both in total catch and as a percentage of Belize’s total catch. In 2009, commercial fishing at Turneffe generated approximately US\$500,000 while the social benefits of Turneffe’s fishery remain very significant with 180 to 200 fishermen supporting their families from the Atoll. The Atoll’s other major industry, tourism, has largely focused on marine-based ecotourism with Turneffe earning an international reputation as a highly prized tourism destination for scuba diving, catch-and-release sport fishing, and ecotourism. Tourists stay either at one of Turneffe’s three “all-inclusive” resorts or visit on day trips from elsewhere in Belize. Turneffe’s tourism generates approximately US\$23.5 million per year in Turneffe-specific expenditures and nearly US\$37 million in total expenditures in Belize. An important component of tourism’s economic impact is the number of jobs created. Tourism expenditures from Turneffe supported approximately 1,220 full-time jobs in Belize in 2011.

Tourism activities (diving, snorkeling, sport fishing, and ecotourism) from Atoll resorts generate significantly more per tourist than do these same activities offered as day excursions from other locations. Scuba diving from Turneffe resorts, for instance, generates an average of \$232 per tourist, while day excursions to Turneffe from elsewhere in Belize generate \$182 per diver and those offered by cruise ships generate on average only about \$88 per passenger. This does not mean that Scuba diving day excursions to Turneffe do not provide significant economic benefit – they do; however, the impact per visitor is not as significant as it is for tourists staying at Turneffe’s resorts.

Most catch-and-release sport fishing at Turneffe is done from its three resorts generating an average daily expenditure of \$327 per person. In contrast, day excursions from other locations for catch and release sport fishing generate approximately \$150 per visitor per day.

While expanding the number and size of resorts may appear financially promising, this must be handled carefully. Turneffe’s value as a tourism destination is directly tied to a healthy marine environment, and protecting Turneffe’s fragile marine and terrestrial environments is critical to the Atoll’s economic future. At present, Turneffe’s tourism, emphasizing marine-based ecotourism, appears to be sustainable and compatible with

its commercial fishing. Future development must be approached in a manner that assures sustainability of both Turneffe's environment and its commercial fishery. There is reason for concern. Under construction at Ropewalk Caye, in the Southern part of Turneffe, is a new hotel which includes nearly 100 rooms, a 200 foot swimming pool, a marina for large yachts, condos, and a supermarket – a scale of development which is inappropriate for an environmentally sensitive atoll. This project has included a massive dredge and fill operation as well as the destruction of many acres of mangroves and littoral forest. A proposal for another large resort project includes a golf course, vacation homes, condos, and a marina.

With at least 190 parcels – 23% of total land – privately owned, Turneffe Atoll faces increasing conflict between user rights and its fragile ecosystem. There is a need for improved environmental assessment prior to development and more thorough oversight during construction. Of particular concern are dredging and widespread clearing of mangroves for tourism projects.

Case Studies Suggest that Collaboration among Local Stakeholders is Critical

An impressive amount of research, planning, and stakeholder consultation has generated widespread support for the Turneffe Atoll Marine Reserve. The comprehensive *Turneffe Atoll Marine Reserve Management Plan, 2012-2017* is considered to be the most comprehensive management plan written in Belize to date. It contains concrete management targets and integrated conservation planning to improve the Atoll's biodiversity, develop sustainable commercial fishing, provide effective enforcement, and ensure adaptive management based on stakeholder engagement, scientific research, and careful monitoring.

While the Management Plan provides a solid framework, the new Marine Reserve can also learn from the experiences of successful MPAs around the world. In this report, three case studies are examined which demonstrate collaboration and synergy between ecotourism and commercial fishing.

The first case study is of the **Chumbe Island Coral Park**, located off the island of Zanzibar in Tanzania. Chumbe is home to the country's most successful MPA and Zanzibar's most celebrated eco-lodge. In 1991, the government approved the Coral Park as a "no-take" marine reserve. Local fishermen initially complained that they had not been consulted and that they were suddenly excluded from their traditional fishing grounds. Opposition gradually diminished, however, as managers of the Coral Park and eco-lodge proactively provided jobs as park rangers and lodge staff to former fishermen. Most importantly, illegal fishing decreased four-fold between 1994 and 2004 and commercial fishing improved significantly within the MPA, as well as in its surrounding

waters. These measures have demonstrated to fishermen the economic benefits of the Marine Protected Area.

While Chumbe demonstrates the need to engage and earn the support of commercial fishermen, **Cabo Pulmo National Park (CPNP)**, in Mexico's Baja California Sur, illustrates the importance of stakeholder support in both the establishment of a reserve and ongoing vigilance to prevent inappropriate tourism development. Hailed as "the world's most robust marine reserve," fish stocks, which had been declining before the MPA, increased 4.6 fold between 1999 and 2009. Scientists credit this impressive increase to a large "no take zone" and the active engagement of local residents, a number of whom shifted from fishing to ecotourism businesses. Stakeholders are also waging an ongoing, high-profile campaign against a mega-resort development adjacent to the reserve. The coalition contends that this massive tourism development will significantly damage the fragile coastal ecosystems and the commercial fishery, as well as the MPA.

In 2012, **the Maldives**, a cluster of sea level atolls in the Indian Ocean, created the world's largest Marine Protected Area which includes all of its islands and the surrounding waters. This nationwide reserve marked a capstone on a series of impressive actions the Maldives government has taken to promote sustainable fishing and tourism development.

These case studies provide lessons that are relevant for the new Turneffe Atoll Marine Reserve which faces the twin challenges of declining commercial fishing and unsustainable tourism development. The case studies demonstrate that commercial fishing and ecotourism interests can work together and find synergies. Fish stocks can be increased with proper management, including adequate enforcement; and, good sustainable jobs for displaced fishermen can be generated through low-impact, environmentally sensitive tourism.

These case studies also emphasize that successful MPAs require the active and ongoing involvement of local stakeholders, particularly the commercial fishermen and eco-resorts, to maintain the MPA and prevent unsustainable, environmentally damaging activities. Tourism businesses can also play an important role in creating, monitoring, and financing MPAs and in educating visitors about their importance. These case studies demonstrate that commercial fishing and tourism stakeholders can work together for their mutual benefit. A well-functioning MPA should be a "win-win" for commercial fishing and environmentally sensitive tourism.

High Value Tourists Demand Eco-responsibility

Tourism based on sun, sand, and sea is the world's largest and fastest growing travel sector, with high-value, low-volume, nature-based tourism growing rapidly. Consumer trends project strong, long-term demands for ecotourism and educational tourism, and market studies over the last decade have documented sustained consumer interest in tourism that protects the environment and respects local culture.

While Turneffe now attracts conscientious, high-value consumers, there is a danger of losing this lucrative market if the Atoll does not follow international standards for sustainability. A recent World Tourism Organization (UNWTO) report states that "the build-up of consumers' socio-environmental awareness in tourism development is leading to increased scrutiny on the part of the public and a growing requirement for new tourism developments to be sustainable." Only by protecting both the Atoll's marine and terrestrial ecosystems will Turneffe continue to prosper as an attractive destination for high-value tourism. The new Marine Reserve is an important step forward, but it must be accompanied by standards for sustainable tourism construction as well as well-enforced best practice guidelines for the operation of tourism facilities. The project under construction at Ropewalk Caye is ill advised: it is too large, is damaging the Atoll's fragile terrestrial and marine ecosystems, and is likely to damage the appeal of Turneffe to high value conscientious travelers.

We feel that Turneffe's best option for maximizing economic benefits, sustaining its sensitive environment, and protecting its fishery is to expand its high-value, low-impact, overnight capacity and also to increase day visitors from other parts of Belize. Additionally, we feel there is potential to expand educational and volunteer tourism at Turneffe's two research institutes and to create stronger links between these scientific centers and the Atoll's eco-resorts.

The Turneffe Atoll Marine Reserve would do well to establish a "green" certification program that measures tourism's environmental, social, and economic impacts. Certification is increasingly recognized as an important tool for ensuring sustainable tourism practices. And certification of Turneffe Atoll as a sustainable (green) tourism destination, for instance, would be a logical complement to the new Marine Reserve and would help to provide a framework for ongoing protection of the Atoll's land and marine ecosystems.

It is important to determine how much Turneffe's tourism can be expanded and still protect the Atoll's fragile terrestrial and marine ecosystems. While careful analysis is needed to determine the optimum number, size, and location of new tourism developments, our analysis expects that the total number of operating resorts probably should not exceed six high-value, low-impact resorts. These larger resorts could be

complemented by a small number of more basic overnight guest houses, possibly built at fishing camps or at the two scientific research stations.

In conclusion, this analysis seeks to answer the following four questions:

- ***Question 1: What types of MPAs have been most successful in increasing fish stocks and improving commercial fishing?***

While reasons for MPAs improving commercial fishing are complicated, one common denominator for success is stakeholder participation; and, this has been most effective when both commercial fishing and nature-based tourism actively support, and benefit from, the MPA. The initiative to create the Turneffe Atoll Marine Reserve involved collaboration between the fishing and tourism communities which bodes well for the long term success of the reserve. It is vital that Turneffe's commercial fishermen and tourism businesses continue to be actively involved in monitoring and administering the new reserve.

- ***Question 2: What types of tourism are compatible with a healthy commercial fishery?***

Turneffe Atoll's non-extractive, marine-based ecotourism, including catch-and-release sport fishing, Scuba diving, and nature-based tourism, has proven to be compatible with commercial fishing for several decades. Catch-and-release sport fishing and commercial fishing target different species. Therefore, sport and commercial fishing coexist rather than compete with one another. In addition, ecotourism provides commercial fishermen with alternative employment as fishing guides, boat captains, and dive instructors.

Both commercial fishing and ecotourism require a healthy marine ecosystem and the ability for these two sectors to work together provides powerful synergies for protecting Turneffe's marine environment.

- ***Questions 3: What are the economic, social, and environmental pros and cons of different types of tourism?***

Research in Belize and elsewhere demonstrates significant differences in the impacts and benefits of various models of tourism. CREST research in Costa Rica, for instance, documented that small-scale, higher-end nature-based tourism generates more for the local economy and creates more permanent, good paying jobs for local residents than do either large-scale resorts or cruise tourism. On Costa Rica's Osa Peninsula, local residents working at eco-lodges make on average double the income of workers in other local jobs. Small-scale, nature-based tourism offers local economic benefits while protecting the environment and the local communities.

- **Questions 4: What types of tourism are most suitable for Turneffe, given the Atoll's realities and current consumer trends in tourism?**

Tourism destinations must choose between high value and high volume tourism. If the objective is, as we think it should be, to simultaneously maximize local economic benefits and protect Turneffe's commercial fishing, the choice is clear. High value, low impact tourism provides economic benefits, including good jobs, environmental stewardship, and sustainable utilization of resources. A modest increase in the number of low-impact resorts at Turneffe appears to be warranted and the number of day visitors from elsewhere in Belize can be increased. There is also significant potential to expand Turneffe's educational tourism.

This strategy benefits from a growing interest in high value tourism appealing to discriminating international travelers. Recent consumer surveys find travelers are increasingly interested in holidays that impacts local communities responsibly, and this market has been strong even in tough economic times. A 2013 meta-analysis by CREST found "increasing recognition among both travel professionals and consumers of the importance of responsible travel." The new Marine Reserve enhances Turneffe's appeal to discriminating travelers.

Map 1: Map of Belize



Source: <https://www.cia.gov/library/publications/the-world-factbook/geos/bh.html>

Map 2: Map of Turneffe Atoll



Source: Turneffe Atoll Coastal Zone Management Guidelines, 2011.

Turneffe Atoll, Belize:

Balancing Sustainable Tourism & Commercial Fishing In a Marine Protected Area (MPA)

1. Introduction

On November 22, 2012, the Belize government officially declared the Turneffe Atoll Marine Reserve. Until then, Turneffe Atoll had been the only atoll in the Belize Barrier Reef System with no significant protection or directed management. However, after years of studies and surveys, public discussions and political negotiations, Turneffe Atoll became Belize's newest and largest – 325,000 acre -- marine protected area (MPA).¹ The lengthy campaign to create the Turneffe Atoll Marine Reserve has been buttressed by solid scientific studies and collaboration of all stakeholders groups, most importantly those with direct invested interests in the Atoll: local commercial fishers and ecotourism operators. Crucial to Turneffe's long term success will be maintaining the active support and involvement of both commercial fishermen and ecotourism operators.

This study was commissioned by Turneffe Atoll Trust to examine topics related to sustainable management of the Atoll and to draw on lessons from coastal development throughout the world. The topics examined include two key factors in: 1) ensuring sustainable tourism development, and 2) building synergy and collaboration between Turneffe's two principle economic activities: tourism and commercial fishing.

We address the following four questions:

- What types of MPAs have been most successful in increasing fish stocks and improving commercial fishing?
- What types of tourism are compatible with healthy commercial fishing?
- What are the economic, social, and environmental pros and cons of different types of tourism development?
- What types of tourism development are most suitable for Turneffe, given:

¹ "Turneffe Atoll Reserve: Signed, Sealed, Delivered," 7 News, November 22, 2012; "Cabinet endorses decision to make Turneffe Atoll a Marine Reserve," *San Pedro Sun*, October 1, 2012; Emily Cooper, Laretta Burke, and Nadia Bood, *Coastal Capital: Belize. The Economic Contributions of Belize's Coral Reefs and Mangroves*, Working Paper, World Resources Institute, January 2009, pp. 49-50.

- The Atoll's environmental, social, and economic realities, and;
- The current international consumer trends in tourism

In seeking answers to these questions, we examined the current realities in Belize and at Turneffe Atoll, as well as studies of other comparable destinations. We began by conducting a site visit and interviews with several dozen persons involved in tourism and commercial fishing in both Belize City and at Turneffe Atoll. We carried out extensive office-based research and reviews of relevant studies focused on the impacts of MPAs on fish stocks, commercial fishing and ecotourism. Additionally, we evaluated stakeholder involvement, tourism development, impacts of climate change, and tourism trends most relevant to Turneffe Atoll. We also reviewed a number of the studies about Turneffe Atoll and other coastal and marine areas, including studies on tourism, fisheries, MPAs and government policies in Belize. Finally, we drew upon CREST's extensive research on different models of tourism and tourism industry trends.

The purpose of this report is to inform decision makers in the commercial fishing and tourism sectors, as well as government and non-government organizations, about the pros and cons of various types of tourism development as they relate to Turneffe Atoll. The findings demonstrate that both carefully managed marine-based ecotourism and sustainable commercial fishing benefit from successful marine reserves. In contrast, large-scale commercial fishing and large-scale or poorly-planned resort development damage fragile atoll environments, including corals, mangroves, and other marine habitats. Evidence from other destinations shows that ecotourism and commercial fishing businesses share common interests and therefore can and should collaborate in protecting Turneffe Atoll's natural resource base.

2. Turneffe Atoll Today

Located 25 miles east of Belize City, the Turneffe Atoll is a discrete group of cayes surrounded by its own living coral reef. Approximately 30 miles long and 10 miles wide, Turneffe is the largest and most biologically diverse coral atoll in this hemisphere. It supports a number of threatened and endangered species, including the American saltwater crocodile, Antillean manatee, and several species of sea turtles. In addition to Turneffe's mangroves, sea grasses, and corals the atoll supports some of the last

remaining littoral forest in Belize. Littoral forests are those occurring along coastlines or on islands, and they are “one of the most threatened ecosystems in Belize.”²

In addition to its wealth of biodiversity, Turneffe has proven to have significant economic importance to Belize. It has historically been a substantial contributor to the commercial harvest of conch, lobster and finfish in Belize: and, the atoll is known worldwide as a sport fishing and Scuba diving destination. It is also a growing center for marine research. At the same time, development pressures are increasing.

Turneffe’s economic contribution to Belize is significant. It has been estimated to be \$62 million per year, divided as follows:

- Shoreline protection from tropical storms: \$38 million
- Total tourism expenditures: \$23.5 million
- Commercial fishery (conch and lobster): \$0.5 million. Although this is a smaller economic contribution, it is very significant in terms of social benefits, supporting 180-200 fishermen and their families.³

Creation of the new reserve has been widely supported by both commercial fishing and tourism stakeholders. However, this comes with important caveats: 1) that stakeholders be involved with, and benefit from, the Reserve, and 2) that the reserve succeeds in replenishing commercial fish stocks and protecting the Atoll’s tourism resources. To be most effective, the Turneffe Atoll Marine Reserve needs to be accompanied, as discussed below, by enforcement of fishing regulations as well as effective policies and standards for land-based tourism and other types of development. This report will explore these issues.

- **Commercial Fishing**

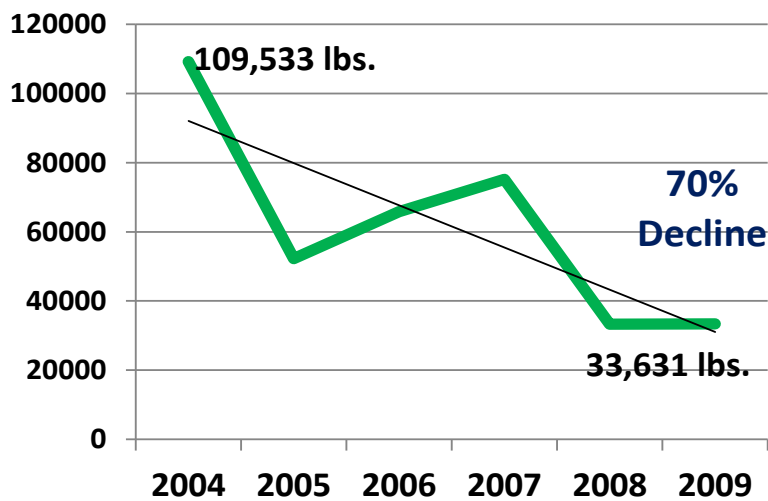
Turneffe Atoll has historically been a productive commercial fishing area. Lobster, conch, snapper and grouper are the main commercial species and the Atoll’s mangroves, sea grasses and back reef flats are critical habitats for these species. However, Turneffe’s commercial fishing has experienced a sharp decline over the past decade. Between 2004 and 2009, sales of Turneffe lobster tails to Belize’s fishing

² Wildtracks, *Turneffe Atoll Marine Reserve: Management Plan, 2012-2017*, Belize Fisheries Department, Belize City, 2011, p. 164.

³ Anthony J. Fedler, *The Economic Value of Turneffe Atoll: Full Report*, Human Dimensions Consulting, August 2011, pp. 13, 19, 21; Wildtracks, *Management Plan*, p. 34.

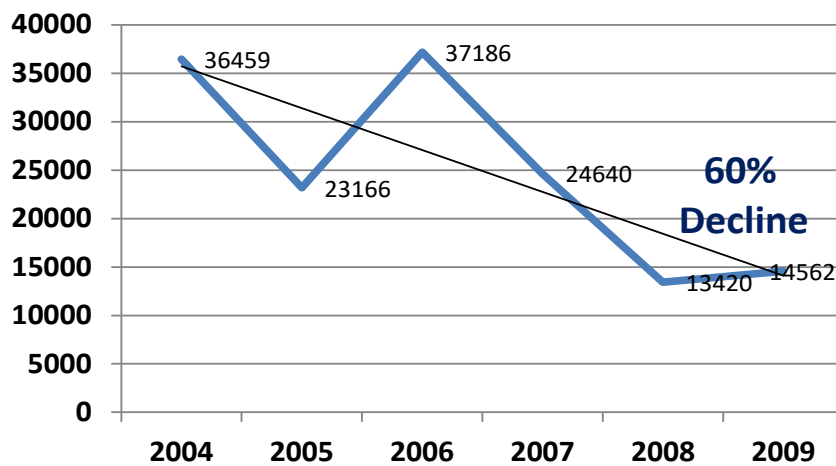
cooperatives declined by 70.4%. By comparison, overall national sales of lobster tails to cooperatives during the same period declined only 3.6%. Similarly, the amount of Turneffe conch sold through cooperatives declined just over 60% from 2004 to 2009, while nationally conch sales increased by 18% over this same period. As a result, the percentage of Belize’s lobster coming from Turneffe decreased from 20.4% to 6.2% between 2004 and 2009 and the percentage of Belize’s conch coming from Turneffe decreased from 5.4% to 2.0%.

Figure 1: Turneffe Lobster Production 2004 – 2009



Source: Hayes, "Turneffe Atoll Fishery," p.1.

Figure 2: Turneffe Conch Production 2004 – 2009



Source: Hayes, "Turneffe Atoll Fishery," p. 2.

According to Turneffe’s fishermen, a number of things have contributed to the decline. Of particular concern is the illegal harvest of undersized or out-of-season conch and lobster. Local fishermen estimate that as much as 40% to 50% of the lobsters and conch harvested at Turneffe are taken illegally.⁴ This is obviously, as one report concludes, “a major concern for the health of the commercial fishery.”⁵

There are up to 200 licensed commercial fishermen currently fishing at Turneffe. Turneffe’s fishermen are a combination of “camp fishermen” who occupy fishing small land-based camps around the atoll and fish primarily for lobster; and “sailboat fishermen” who access the atoll via live-aboard sailboats and concentrate on conch, lobster, and finfish. With the decline of commercial fish stocks, tourism has offered an important alternative employment for fishermen as fishing or diving guides with tourism businesses. Some traditional fishermen have also expressed a desire to develop their fishing camps into small guest houses.

- **Tourism Activities: Diving, Sport Fishing and Ecotourism**

Turneffe Atoll has become a world-renowned tourism destination for both Scuba diving and sport fishing, and the tourism sector . Turneffe offers more than 60 dive sites as well as catch and release sport fishing for bonefish, permit, and tarpon. It has been recognized by experts as one of the world’s seven best bone fishing destinations and one of the world’s ten best permit fishing destinations.⁶ Tourists stay at one of the three resorts currently operating on the Atoll or come on day trips from Belize City, San Pedro, Caye Caulker and Placentia or from cruise ships in port.

Aside from shoreline protection, tourism is the leading economic activity on Turneffe Atoll, generating, according to an economic valuation study by Dr. Anthony Fedler, an estimated US\$19 million annually in total direct expenditures. When the appropriate value added or multiplier effect of these expenditures are incorporated, the total economic effect of tourism in Turneffe is close to \$23.5 million per year. Further, the total direct expenditure in Belize by Turneffe-bound tourists is estimated to be \$30 million per year, and, when value added is incorporated, it totals nearly \$37 million.⁷ On

⁴ Author’s interviews, April 2012.

⁵ Fedler, *Economic Value: Full Report*, pp. 15-16.

⁶ Fedler, *Economic Value: Full Report*, p. 1.

⁷ These statistics are from Fedler’s excellent 2011 analysis of Turneffe Atoll’s economic value. Fedler calculated **total economic impact** of tourism based on three components: 1) **direct effects** which are on-site or immediate expenditures such as lodging, meals, guides, and taxes; 2) **indirect effects** which refers to increased economic activity when a contractor, vendor, or manufacturer uses money received from tourists and tourism businesses for goods and services to pay others who support their business for

top of these direct expenditures, Turneffe’s tax revenue from tourists totals \$3.4 million for the days spent in Turneffe and over \$5.1 million in tax revenues collected in all of Belize for tourists who visit Turneffe during their stay.

Figure 3: Summary of Turneffe Atoll Tourism Direct Economic & Value Added Impact (US\$)⁸		
Economic Component	Total Trip Expenditures	Turneffe-Specific Expenditures
Turneffe diving, fishing and eco-tourism activity	\$9,816,211	\$9,816,211
Non-Turneffe tourism activity	\$3,825,675	\$0
Accommodations	\$7,097,944	\$3,977,957
Other Expenditures	\$4,409,678	\$2,053,325
Taxes and licenses	\$5,157,595	\$3,430,578
Total direct impact	\$30,307,103	\$19,278,071
Value Added Multiplier	\$6,667,563	\$4,241,176
Total Economic Impact	\$36,974,666	\$23,519,247

Using job and income multipliers from the Belize Tourism Board, the Fedler study calculates that, in 2011, tourism at Turneffe Atoll supported 1,220 full-time jobs generating \$14.6 million in personal income to workers employed in tourism and associated industries. Tourist expenditures for days spent specifically at Turneffe created 776 jobs and \$12.4 million in personal income.⁹

Two types of tourism businesses utilize Turneffe Atoll: 1) “all inclusive” resorts located at the Atoll which provide tourism activities as part of a package price and 2) businesses not based at Turneffe that provide daily excursions to the Atoll.¹⁰ No master list of these businesses exist, but the Fedler study identified 68 businesses – including hotels, resorts, dive shops, live-aboard boats, research facilities, and tour operators – that

goods or services. This includes, for instance, bankers, accountants, grocery store owners, marina operators, etc.; and **3) induced effects** or changes in spending patterns caused by increased wealth or income of persons directly or indirectly employed by tourism businesses such as resorts, fighting lodges, restaurants, dive shops, etc. **Value added** is the sum of indirect and induced effects. Because Belize lacks economic modeling programs to estimate indirect and induced effects of tourist expenditures, the study used an approximated value of 1.22. This relatively low output multiplier is appropriate in countries like Belize where the tourism sector is heavily dependent on imports. In addition, the study used Belize Tourism Board data to calculate **income and job multipliers** for Belize. Fedler, *Economic Value: Full Report*, pp. 5-6.

⁸ Fedler, *Economic Value: Full Report*, p. 13.

⁹ Ibid., p. 14.

¹⁰ Ibid., p. 6.

offered tourism services at Turneffe. Of these, 49 businesses participated in the survey, for a 78% response rate.¹¹

Based on data from the businesses that completed the survey, this study calculated the economic value of some 11,500 tourists who visit Turneffe each year for diving, sport fishing, and other ecotourism activities. No attempt was made to estimate the number of tourists from non-responding businesses or their estimated economic value and therefore these statistics underestimate “the full extent of tourism related economic benefits from Turneffe Atoll.”¹²

Figure 4: Tourist Numbers & Expenditures at Turneffe Atoll, 2010 (US\$)¹³

Expenditure Category	Number of Tourists per Activity	Average Days Stayed in Turneffe	Average Daily Expenditure	Turneffe Related Expenditures	Total Economic Value to Turneffe
Resorts on Turneffe					
Diving/Snorkeling	1,387	7	\$232	\$2,252,488	\$3,466,695.00
Sport Fishing	1,250	7	\$327	\$2,861,250	\$3,937,500.00
Ecotourism	1,221	7	\$179	\$1,529,913	\$2,581,194.00
Daily Excursions					
Diving/Snorkeling	6,894	2.43	\$182	\$3,048.94	\$5,595,308.00
Sport Fishing	267	2	\$150	\$80,100	\$163,404.00
Ecotourism	512	1	\$85	\$43,520	\$123,392.00

In estimating visitor expenditures, Fedler’s study separately analyzed Scuba diving, sport fishing and ecotourism activities and further divided each activity into two groups: those staying in Turneffe Atoll resorts and “daily vacationers” who stay elsewhere in Belize and come by boat on day trips to Turneffe. This detailed analysis yielded

¹¹ Ibid., p. 7.

¹² Fedler, *Economic Value: Full Report*, p. 7.

¹³ Ibid., pp. 8-12.

important information about the relative economic value of each category which can help in determining the types of tourism that should be pursued at Turneffe in the future.

These statistics show that the majority of sport fishing and ecotourism activities at Turneffe are done by resorts (and, to a minor extent, educational institutions) located on the Atoll rather than through day visits from other locations. In contrast, for diving, nearly five times more tourists (6894 compared with 1387) participated in such activities via daily excursions rather than from resorts based at Turneffe. It is worth noting, however, that the daily diving tours from locations outside of Turneffe generate less per day (\$182 vs. \$232) than those excursions done from Turneffe resorts. Furthermore, Turneffe-based tourists come for an average of 7 days of diving, while those on day excursions spend on average 2.43 days diving at Turneffe during a typical week-long stay in Belize. The findings clearly demonstrate that for all three types of activities – diving, sport fishing, and ecotourism -- tourists staying in a Turneffe-based resort generate more money for Belize's economy, than do those on day excursions. Thus, tourism proponents should explore ways to sustainably increase the Turneffe-based accommodation options, while insuring the protection of the Atoll's environment. This must be done by first identifying the carrying capacity of the Atoll for tourism so that the Atoll's fragile environment is not overwhelmed. The reality is that the Atoll's carrying capacity is limited and tourism expansion needs to be done in ways that do not overwhelm the Atoll's fragile environment.

The Fedler study estimated that 1300 cruise ship passengers per year visit Turneffe on diving and snorkeling tours. Because cruise passengers do not stay overnight in Belize (and in fact typically are picked up and dropped off from their ships), capturing their economic value proved difficult and therefore their activity was not included in his report. However, based on information on various cruise lines and Belize excursion websites, as well as CREST's previous study of the economic impacts of cruise tourism in Belize, rough estimates can be made. Carnival, Royal Caribbean, Celebrity, and Norwegian Cruise Lines all offer Scuba diving trips to Turneffe. The cost of a 2-tank diving excursion ranges from a minimum \$169 to \$185 per person. Based on 1300 cruise passengers per year who take excursions to Turneffe Atoll, these prices yield a total of between \$219,700 and \$240,500.¹⁴

¹⁴ Celebrity Cruises, "Shore & Landing Details,"

<http://www.celebritycruises.com/shoreExcursions/product/detail/view.do?ActivityLevel=&ActivityTypeId=4&CurrencyCode=&DestinationCode=CARIB&DurationCode=&LocationCode=&ProductCode=ZF03&ShipCode=&SortBy=&backPageUrl=%2Fsearch%2FshorexSearchResults.do%3FDestinationCode%3DCARIB%26DurationCode%3D%26ActivityTypeId%3D4%26ActivityLevel%3D%26shipCode%3D%26Day%3D%26Month%3D%26Year%3D%26CurrencyCode%3D%26x%3Dnull%26y%3Dnull%26backPageUrl%3D%26pager.offset%3D160>.

A CREST study of the impacts of cruise tourism found that “tours in Belize that are purchased onboard or online (via the company website) undergo a markup by cruise lines which several of those involved in cruise tourism as well as BTB officials said is typically 100%. Under this arrangement, it is estimated that half of the purchase price accrues to the ship while the other half accrues to the tour operator.” In addition, the CREST study found that nearly all - 93% -- of excursions in Belize are purchased onboard.¹⁵ Based on a 100% markup, this means that the actual revenue generated for the Belize economy is between about \$110,000 and just over \$120,000 (between \$84.50 and \$92.50 per person) and the amount actually flowing into Turneffe's economy is likely a small fraction of this. In addition, because these tours provide food and snacks, as well as pick up and return at the cruise ship, there are no opportunities for other local businesses to gain any further spending from the cruise tourists heading to Turneffe. In contrast, Scuba diving offered by resorts in Turneffe generates \$3.5 million – or *29 times more* -- for virtually the same number of divers (1300 vs.1387). Cruise tourism is currently playing a very small role in Turneffe's tourism earnings; given its limited economic value, it is recommended that cruise tourism excursions should not be expanded.¹⁶

At Turneffe, sport fishing generates even more revenue per tourist than Scuba diving and other tourism activities, with catch and release playing an essential role in ensuring the sustainability of this activity and the fish stocks. In 2009, Belize passed landmark sport fishing legislation becoming the first country in the world to mandate that all bonefish, tarpon and permit be released. In fact, according to a study by Anderson and Hayes:

Catch and release sport fishing has been the standard practice at Turneffe Atoll for three decades. Over this period, the health of Turneffe's sport fishery has not only been sustained, it has improved. Sport fish stocks have increased as has average fish size. This would appear to substantiate that catch and release, as it is practiced in Belize, has successfully established a sustainable sport fishery.¹⁷

¹⁵ Center on Ecotourism and Sustainable Development (CESD), *Cruise Tourism in Belize: Perceptions of Economic, Social & Environmental Impact*, Washington, DC and Stanford University, November 2006, pp. 50-51.

¹⁶ Ibid.

¹⁷ Alex Anderson and Craig Hayes, “Analysis of Fish Morality Related to Catch and Release Sport Fishing in Belize,” 2011, p. 4. Unpublished paper obtained from Craig Hayes.

Today, Belize is best known for “the Grand Slam of flats fishing” – bonefish, permit and tarpon – and it is estimated that over 90% of all sport fishing tourists target these three species. Data collected by one fly fisherman, Craig Mathews, between 1993 and 2010 at Turneffe showed that the mortality rate from catch and release fishing was only 0.28%. In a 2011 survey, 11 sport fishing guides in Turneffe reported 22 bonefish, 2 tarpon, and 1 permit dying after release of approximately 13,800 caught fish, for an even lower mortality rate of 0.18%.¹⁸ These findings show a slightly lower post release mortality rate than for other destinations utilizing similar fishing techniques¹⁹ and demonstrate that “catch and release sport fishing is an environmentally and economically sustainable tourism sector of Belize tourism economy.”²⁰

- **Resorts and Other Developments at Turneffe Atoll**

Distance and inaccessibility have helped to protect Turneffe from the fast-paced and often chaotic overdevelopment that has occurred elsewhere in Belize’s coastal areas. Nevertheless, Turneffe has already experienced some destructive and inappropriate development, and this is likely to increase as more of its land becomes privately owned and ease of access is increased as a result of more airstrips and faster boat linkages to the mainland. As the Turneffe Atoll Coastal Advisory Committee’s 2011 *Development Guidelines* states in order to “sustain Turneffe Atoll’s sensitive and valuable terrestrial and marine environments,” its tourism industry must be “managed sustainably by facilitating low-impact, nature-based tourism capitalizing on its unique natural assets.”²¹

Currently, Turneffe has the following types of development:

- Three operating all inclusive sport fishing and dive resorts:
 - ✓ Turneffe Flats Resort with 8 cabanas and 2 villas with a total capacity of 28.²²

¹⁸ Ibid., p. 3.

¹⁹ Paul Riess et al summarized 82 studies on catch and release sport fishing mortality across range of species. Post release mortality ranged from 0.2% to 5.8% with average of 2.76%. The percentage varied depending on species, fishing techniques, bait used, and how fish were handled. The location of hook most important factor: if the fish is hooked in lip or jaw, mortality is very low. This is type of fishing most common in Belize. P. Reiss, M. Reiss, J. Reiss, “Catch and Release Fishing Effectiveness and Mortality,” Acute Angling Inc., Department of Material Science, University of Maryland; Lab. Supvr. Dept. Of Neurobiology, Rutgers, University. 2003.

²⁰ Anderson and Hayes, “Catch and Release,” p. 4.

²¹ *Development Guidelines 2003*, p. 4.

²² Author’s site visit, April; 2012; Turneffe Flats website: <http://www.tflats.com/belize-vacation->

- ✓ Turneffe Island Resort, accommodating up to 42 guests in 8 cabanas and 12 rooms.²³
- ✓ Blackbird Caye Resort, accommodating up to 40 guests in 18 cabanas.²⁴
- 4-5 properties have been partially or fully developed for private homes.
- Two educational research stations:
 - ✓ University of Belize's Environmental Research Institute at Calabash Caye with a dorm and 2 cabanas that can accommodate up to 32 researchers.²⁵
 - ✓ Oceanic Society Field Station at Blackbird Caye with 8 cabanas for 16 and dorm rooms for up to 18 students.²⁶
- Some 25 fishing camps scattered throughout the Atoll.
- A Coast Guard station on Calabash Caye.
- A Port Authority lighthouse on Mauger Caye. There is also an old dilapidated lighthouse below Caye Bokel.
- A new hotel currently under construction at Ropewalk Caye.

Over the last decade, land ownership on Turneffe has shifted dramatically. In 2000, nearly all land at Turneffe was government-owned; by 2011, 23% (or some 190 parcels, totaling about 6500 acres), was privately owned. At that time another 19 parcels had been surveyed but not yet recorded as sold.²⁷

Only a small percentage of these 190 privately-owned parcels have been cleared or developed. Six locations, totaling around 200 acres, have been developed for tourism: 3 all inclusive sport fishing and dive resorts, 2 educational research stations, and one restaurant/resort which is currently for sale. (The new hotel at Ropewalk Caye, currently under construction, was apparently not included in this survey.) Another four properties, totaling 25 acres, have been fully or partially cleared for residential development.

information/turneffe-flats-lodge.

²³ Author's site visit, April 2012; Turneffe Resort website: <http://www.turnefferesort.com>.

²⁴ Site visit and Blackbird Caye Dive Resort website: <http://www.blackbirdresort.com/>.

²⁵ Website: <http://eriub.org/calabash-caye-field-station/page-3.html>

²⁶ Author's site visit, April 2012; Ocean Society website:

<http://www.oceanicsociety.org/accommodations/belize-families-blackbird-caye-field-station>.

²⁷ "Turneffe Atoll Land Tenure," August 2011, unpublished paper obtained from Craig Hayes.

Figure 5: Land Ownership at Turneffe Atoll²⁸		
	Acres	Percentage
National Land	21,250	77%
Private Land	6,489	23%
TOTAL	27,739	100%

The 2011 *Turneffe Atoll Coastal Zone Management Guidelines* express concern that “the transfer of property from national ownership to private ownership has skyrocketed with large stands of mangroves cleared and critically important marine areas dredged and destroyed.”²⁹ Experiences elsewhere in Belize indicate that putting Turneffe under either national or international protection may not be sufficient to prevent inappropriate construction; careful monitoring and enforcement is also required.³⁰

This appears to be the case with the resort currently being constructed at Ropewalk Caye by a Canadian businessman, Karim Hakimi. Hakimi owns some 140 Hakim Optical stores across Canada. He was knighted in 2005 for his humanitarian work in supporting a Canadian foundation that is fighting blindness and he has provided thousands of pairs of eye glasses to the needy in poor countries.³¹ Described as “a visionary who’s making a difference,” Hakimi is constructing what he calls “Sir Hakimi’s Belize



Sir Hakimi’s Belize Dive Haven (under construction)

²⁸ Ibid.

²⁹ Turneffe Atoll Coastal Advisory Committee, *Turneffe Atoll Coastal Zone Management Guidelines 2011*, Coastal Zone Management Authority and Institute, Belize City, 2011, pp. 4,3.

³⁰ Ian G. Macintyre, Marguerite A. Toscano, Ilka C. Feller, and Maria A. Faust, “Decimating Mangrove Forests for Commercial Development in the Pelican Cays, Belize: Long-Term Ecological Loss for Short-Term Gain?,” *Proceedings of the Smithsonian Marine Science Network Symposium, Smithsonian Contributions to the Marine Sciences*, No. 38, 2009, p. 287.

³¹ Ayah Victoria McKhail, “Sir Hakimi: A Visionary Who’s Making a Difference,” *City Life Magazine*, August/September 2006, website: http://www.hakimoptical.ca/sirhakimi_visionary.html.

Dive Haven” -- which is by far the largest accommodation to date at Turneffe. The resort’s website describes the development as “a dream in the process of being realized” and invites investors to “get in on the ground floor.”³² The promotional material states, “This exclusive, private island already boasts a 300-foot pier with a 60' x 70' restaurant overlooking the clear, blue Caribbean Sea, and a 500' dock and dredged bay to accommodate large yachts. But there's still more to be done.”³³

A visit to the site³⁴ revealed not only extensive and inappropriate dredging of sand from the shallow waters around the caye but an enormous -- 205 x 40 foot -- swimming pool (built but not filled). Nearly everything about the project seems inappropriate for an environmentally fragile atoll. According to a foreman, the resort, when completed, will include a 96-room hotel, an airstrip, condos, and a supermarket. The concrete shells of two 4-storey buildings containing a total of 48 rooms had already been built and foundations for two more blocs are in place. Some 40 workers are at the site and, the foreman says, plans are to open within a year. He added that plans call for supporting the entire resort complex with only captured rain water. Even Turneffe’s far smaller and more modest diving and fishing resorts use a mixture of captured rainwater and desalinization. When asked if he could show the master plan, the foreman laughed, confiding that none exists, and “every day brings new ideas for what to build.”

In addition, Blackbird Caye Resort, catering primarily to Scuba divers, has done an expensive feasibility study to undertake a major expansion, including a golf course, marina, vacation homes, condos, and a new airport. (The resort



Blackbird Caye: dtmag.com/Passports/passports.htm

³² Belize Dive Haven Resort & Marina, website: <http://belizedivehaven.com/about.php>.

³³ Ibid.

³⁴ Author visit to site, April 2012.

already has a small landing strip.) Although the required permits had not yet been obtained for this expansion, construction crews at the Blackbird Caye have cleared an extensive swath of mangroves behind the existing cabins.³⁵

Based on observations of the development on Ropewalk Caye and the plans for Blackbird Caye, there appears to be a need for improved environmental assessment prior to development and oversight of dredging and other construction activities on Turneffe Atoll once they begin.

- **Impact of Coastline Tourism on Mangroves**

Turneffe Atoll has extensive stands of mangroves “with high connectivity to reef and sea grass, providing ideal nursery habitat for juvenile commercial species.”³⁶ Recent studies have demonstrated the vital role of mangroves as nursery habitat for several species of reef fish. Mangroves are also recognized for their ability to absorb CO₂, thereby creating wet “carbon markets” – similar to the function played by land-based rainforests. The destruction of mangroves at Turneffe -- and elsewhere in Belize -- poses a major threat to the sustainability of this ecosystem.

As scientists L.J. Pons and J.L. Fiselier argue, “The long-term benefits of sustainable mangrove utilization outweigh the short-term profits of clear felling or reclamation, especially when soils are less suitable.”³⁷ A case in point, they note, is tourism. The authors argue mangroves, left intact, offer a range of benefits for tourism businesses: “Mangroves are of great scenic beauty and allow for nature-oriented tourism such as bird watching and fishing. Tourism should be promoted but its development should be very carefully planned so that local communities can benefit from tourist facilities and activities.”³⁸ The authors contend there is a need to set guidelines for the sustainable use of mangroves in order to ensure that they survive and that host communities – not simply developers – benefit.

Regrettably, much coastal and island tourism development in the last two decades has failed to recognize the importance of mangroves. The proceedings of a 2009 marine science symposium at the Smithsonian Institution found, “Despite repeated demonstration of their ecological and economic importance, mangroves are one of the world’s most threatened ecosystems. Overall, 50% of the world’s mangrove forests have been lost in the past 50 years, with at least 35% lost in just the past two decades”

³⁵ Author’s site visit and interviews, April 2012.

³⁶ Wildtracks, *Management Plan*, p. 164.

³⁷ L.J. Pons and J.L. Fiselier, “Sustainable Development of Mangroves,” *Landscape and Urban Planning*, Vol. 20, no. 1-3, 1991, pp. 103-104.

³⁸ *Ibid.*

and scientists have “predicted the current rate of loss would lead to mangrove extinction in 100 years.”³⁹

The four scientists who authored this study found that all along Belize’s low-lying coastlines and on many of the cayes, “mangroves have been destroyed to make way for hotels and other tourism infrastructure” and, in turn, “such development requires fill material that is dredged from the seabed of nearby subtidal habitats.”⁴⁰ This type of wide-spread cutting of mangroves and dredging is causing a cascade of negative impacts on the nearby ocean: destruction and/or smothering of corals and sea grass, suspension of sediments, reduction of light penetration, increases of nutrient levels, and release of contaminants. The authors content that for the sake of short-term economic gain, some developers have resorted to clearing mangrove forests which “will lead to long-term environmental disruption, ecological degradation, local species extinction, and the consequent economic collapse of the tourism and fishing industries all along the Belizean coast and similarly affected areas of Mesoamerican reefs.”⁴¹

In 2008, the Belize government declared a temporary 9-month (February to November) moratorium on mangrove clearing throughout the country, including Turneffe Atoll. The purpose was to allow the government to revise the mangrove cutting regulations and review the land tenure and development situation. However, in 2009, the World Heritage Committee found evidence of continued “mangrove cutting and excessive development” within Belize’s Barrier Reef area. For these reasons, and others, Belize’s World Heritage Sites were put on the list of “World Heritage in Danger”. The World Heritage Committee called for the Belize government to reinstitute a moratorium on cutting mangroves.⁴²

3. Turneffe Atoll Marine Reserve

The *Management Plan for Turneffe Atoll, 2012-2017* recommends that “the Atoll and surrounding deep waters be integrated into the conservation framework of the country as a marine protected area, managed under a co-management agreement with the Fisheries Department.”⁴³ The Atoll’s land and seascape consist of a network of highly productive flats, creeks, and lagoons dotted by more than 150 mangroves and sea

³⁹ Macintyre et. al., “Decimating Mangrove Forests,” p. 287.

⁴⁰ Ibid.

⁴¹ Ibid., p. 289.

⁴² “Placement of Belize Barrier Reef on World Heritage danger list ‘a wakeup call,’ says Belize Prime Minister,” *Amandala*, June 30, 2009, Website: <http://www.amandala.com.bz/index.php?id=8824>.

⁴³ Wildtracks, *Management Plan*, p. 16.

grass habitat and its shallows serve as important breeding areas for a wide range of fish species, crocodiles, lobster, conch and other invertebrates. It also includes at least three significant fish spawning aggregation sites. As the largest of three offshore atolls lying to the east of Belize's coastal shelf, Turneffe is considered to be an integral part of Belize's reef system, as well as a global ecological hotspot for marine biodiversity.

Yet despite its importance, Turneffe has been the only substantial offshore location in Belize without meaningful management, and this has been identified as one of the biggest gaps in Belize's protection of its coastlines and marine resources. In recent years, Turneffe has experienced increasing pressure between user rights and the Atoll's fragile ecosystem. There is wide consensus that, without intervention, commercial fishing will continue to decline. While the Atoll's small-scale ecotourism sector has, so far, been overall sustainable, the Atoll has been experiencing inappropriate dredging, mangrove destruction, and unsustainable types of construction linked to tourism. The Atoll's ongoing value in providing shoreline protection will continue to be sustainable as long as the integrity of the ecosystem is maintained. Creating a multiple-use marine reserve is a critical step towards effective enforcement of fisheries regulations, rehabilitation of fish stocks, and protection of coral reefs and mangrove forests. When properly managed, a marine reserve will also strengthen, and allow for modest expansion of sustainable tourism based on non-extractive and low-impact activities.

Plans leading to the proposed marine reserve for Turneffe began in the early 1990s with the creation of the Turneffe Islands Committee. This resulted in the creation of informal land allotments for fishing camps, tourism areas, conservation areas, and other private, general occupation parcels. In 1998, the Belize government passed the Coastal Zone Management Act that called for creating, through stakeholder participation, development guidelines for Turneffe and 8 other Coastal Zones. In 2003, the *Turneffe Islands Development Guidelines* were completed but they were never acted upon by the government.⁴⁴ The committee was reformed in 2010 as the Turneffe Atoll Coastal Advisory Committee formed "to review, revise and update" the 2003 guidelines.⁴⁵ The following year they released the *Turneffe Atoll Coastal Zone Management Guidelines 2011*.

In 2010, the Turneffe Atoll Sustainability Council (TASC) composed of all Turneffe stakeholders, was organized by Turneffe Atoll Trust. Following a series of meetings, members of the Council agreed to work towards the creation of a multi-use marine reserve. In 2011, a highly participatory Management Action Planning process "set the foundation for effective management for Turneffe Atoll, with the establishment of the Marine Reserve, [presumably] managed under a Management Board largely composed

⁴⁴ *Management Guidelines 2011*, p. 3.

⁴⁵ *Ibid.*

of Turneffe Atoll stakeholders.”⁴⁶ In late 2011, the *Turneffe Atoll Marine Reserve: Management Plan, 2012-2017*” was completed. Widely considered the best management plan to date in Belize, this lengthy and comprehensive document was funded by Turneffe Atoll Trust and compiled by Wildtracks. Information was obtained from Turneffe Atoll Trust, Healthy Reefs Initiative, Environmental Research Institute, Oceanic Society, The Nature Conservancy, and others. The *Management Plan*, states that creation of the new reserve, with its concrete management targets and integrated conservation planning, “is targeted at improving the biodiversity of the Atoll, and supporting development of sustainability for the fishery, through stakeholder engagement and participation, effective surveillance and enforcement, and adaptive management informed by research and monitoring.”⁴⁷ The final version of this *Management Plan* was completed in August 2012.

The impressive amount of background research, planning, and stakeholder consultation that informed the Marine Reserve Management Plan resulted in apparent widespread support for the new Marine Reserve. Indeed, interviews with fishing cooperative officials, fishermen, resort owners and managers, research station scientists, NGO officials, and others revealed broad-based support for the Marine Reserve. As one fishing cooperative official stated, “An MPA will improve the fishing and increase the lobster and conch. It will cut down on out-of-season fishing and the taking of undersized product.”⁴⁸ The framework for the new Marine Reserve envisions a partnership between the Fisheries Department and key organizations including the Belize Fisherman Cooperative Association, Turneffe Atoll Trust, the Belize Coast Guard, and the University of Belize Environmental Research Institute.

Under the *Turneffe Atoll Marine Reserve Management Plan*, Turneffe’s multi-use Marine Protected Area is divided into four types of management zones.

- **General Use Zones:** Areas designated as general use zones will comprise the largest area, covering 84.7% of the MPA and providing opportunities for established sport and commercial fishing activities by those who comply with regulations and possess valid licenses. Illegal activities include use of gill and seine nets, beach traps and long lines. Clearing mangroves, or dredging are not permitted without government approval. In addition, all tourism development projects must go through an Environmental Impact Assessment (EIA) process and adhere to relevant guidelines and regulations.

⁴⁶ Wildtracks, *Management Plan*, p. 187.

⁴⁷ Ibid.

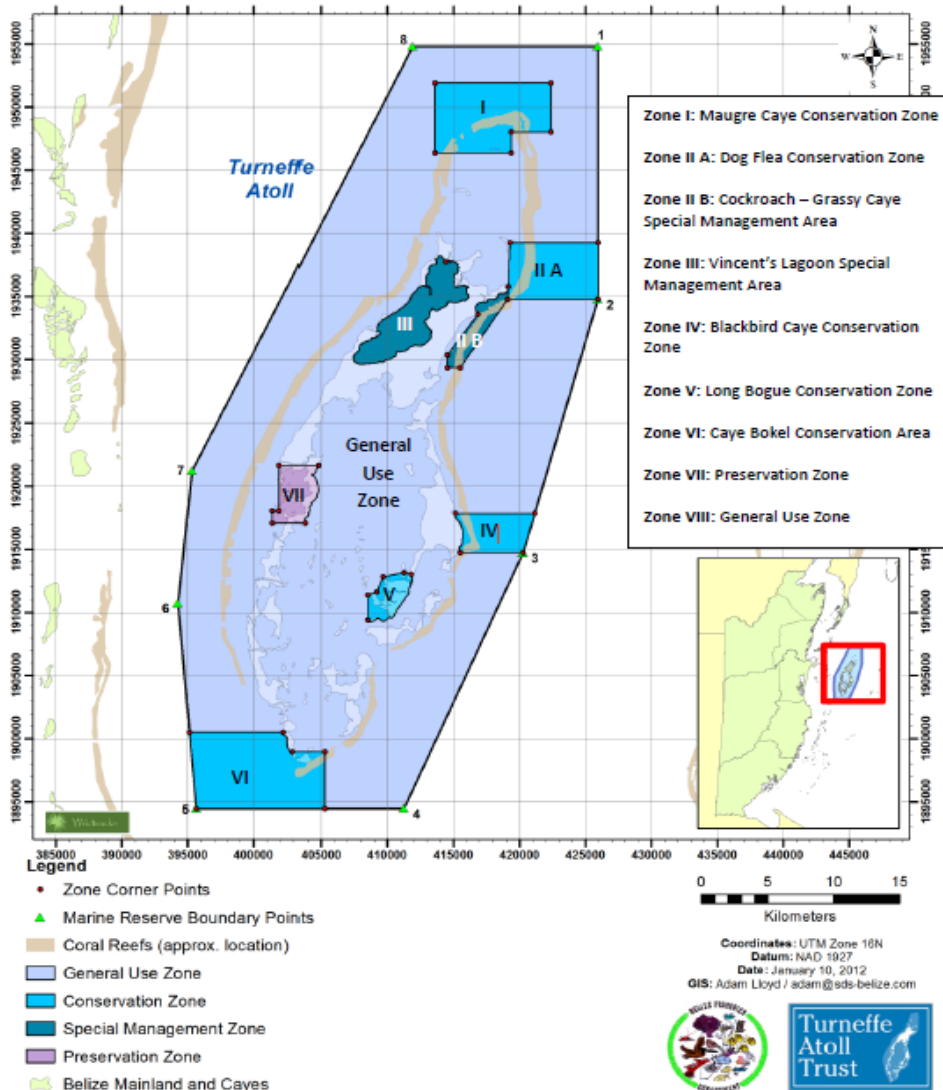
⁴⁸ Author’s interviews with several dozen Belizeans connected to Turneffe Atoll, April 2012.

- **Conservation Zones:** Five separate areas are designated as conservation zones where no extractive activities are allowed. Covering 11.7% of the protected area, these zones prohibit extractive fishing while permitting “no-take” recreational and tourist activities including Scuba diving, snorkeling, kayaking, and catch and release fishing.
- **Preservation Zone:** This zone incorporates 0.9% of the proposed marine protected area and covers shallow lagoon and inundated mangrove areas critical for replenishment. The intent is to preserve such areas “in an entirely natural state and protect areas of particularly fragile habitat or with threatened or rare species.”⁴⁹ No activities will be allowed, boats will not be allowed and only scientific monitoring with special licenses will be permitted.
- **Special Management Zones:** These zones cover two areas totaling 2.7% of the reserve. One area has been established to protect an important conch nursery area. No conch can be harvested in this area.⁵⁰ The second area, the Northern Lagoon, will allow fishing by only the existing fishermen and when they discontinue fishing this area will become a Conservation Area.

Figure 6: Turneffe Atoll Management Zones

⁴⁹ Wildtracks, *Management Plan*, p. 192.

⁵⁰ *Ibid.*, pp. 193-195.



Source: Wildtracks, *Management Plan*, p. 192.

- **Case Studies of Other MPAs**

Globally the total number of marine protected areas as of 2011 was 157,897, (130,709 being nationally protected and 27,188 being internationally protected).⁵¹ As Turneffe establishes its marine reserve, it is useful to ask what types of MPAs have been most successful in increasing fish stocks and improving both commercial fishing and marine-based tourism activities.

MPAs are viewed as an important conservation tool. As one study explains, “Marine protected areas (MPA’s) of any kind contribute to diversity by acting as disturbance-free

⁵¹ *World Database on Protected Areas*, February 2012, website: <http://www.wdpa.org/Statistics.aspx>

zones, where the ecosystem gives a chance to develop a rich web of functions and species. These protected areas become sources to other adjacent reefs in terms of exchange of genetic material. Further they can act as seasonal spawning grounds and zones free from anthropogenic disturbances (such as fishing, boating, diving etc.) and contribute to the dispersal of different functional groups between reefs.”⁵²

- **Marine Protected Areas in Belize**

Belize’s MPA system has been “widely hailed as an example of forward thinking in marine conservation” which “generates economic benefits well beyond the amount invested in their protection.”⁵³ Since 1983, Belize has established 13 MPAs that contain all five IUCN categories: Multiuse Reserves, Natural Monuments, National Parks, Wildlife Sanctuaries, and Wilderness Areas. Of these eight are marine reserves; additionally several others include coastal lands. In 1996, UNESCO declared the Belize Barrier Reef Reserve System as a World Heritage Site, and this includes seven of these MPAs. The Forest Department has jurisdiction for all MPAs that are established under the National Parks System Act (National Parks, Wildlife Sanctuaries, Natural Monuments), while the Fisheries Department has jurisdiction for all marine reserves, and many are managed in partnership with non-governmental organizations.⁵⁴ In addition, Belize has another eleven sites which are protected for spawning aggregation.⁵⁵

The majority of the marine reserves contribute to the conservation of Belize's Barrier Reef. Belize’s MPAs are also a major draw for tourists including divers, snorkelers, and sport fishermen from around the world, while their no-fishing areas help with managing stocks of key commercial species.

MPA managers reported in 2007 that there were some 115,000 visitors to MPAs, a figure representing nearly half of the total number (250,000) of Belize’s overnight visitors for that year. The average reef-related visitor spends about \$150 a day, generating \$17 million in direct MPA-related tourism spending. In addition, indirect economic impacts contributed another \$3.5 million to \$6.9 million to the Belize

⁵² Charlotte Johansson, “The Importance of Marine Protected Areas (MPA’s),” January 1, 2007. Unpublished document obtained by author.

⁵³ Cooper et. al., “Executive Summary,” *Coastal Capital*, n.p.

⁵⁴ Daniel Suman, “Enforcement Chain Analysis within the Belize Barrier Reef System,” unpublished paper, no date, 32 p. website:

<http://www.science2action.org/files/sciencereports/individualstudies/belize/belizeenforcement.pdf>.

⁵⁵ Ibid.; Wikipedia, “List of Protected Areas in Belize,” website:

http://en.wikipedia.org/wiki/List_of_protected_areas_of_Belize#Marine_reserves.

economy. Further, MPA managers note that up to 30% of visits go unrecorded, and therefore revenue from MPAs is likely significantly higher.⁵⁶

These numbers far outstrip the amount government and their NGO partners are investing annually in Belize's MPAs. For instance, the Glover's Reef Marine Reserve, which has been designated a World Heritage Site, hosts an internationally renowned research station and generates between \$3.8 to \$5.6 million from reef-related tourism income and \$0.7 to \$1.1 million in fisheries revenues (2007 figures). Yet, the Fisheries Department's management budget for Glover and other MPAs is only about \$100,000 a year, plus additional fuel costs.⁵⁷

In implementing the new Turneffe Atoll Marine Reserve, lessons can be drawn from the administrative and financial problems with Belize's other MPAs, as well as the best practices identified from other MPAs around the world. According to a former government official in Belize, "We've done a lot of MPAs, but not done them all well. It is very important to have Turneffe done well. We must have the stakeholders and financing in place before we begin."⁵⁸

The following three case studies look at several key issues facing MPAs in different parts of the world and demonstrate the importance – and difficulties – of building synergy and collaboration between tourism and commercial fishing interests. As such they provide lessons which may be useful to those implementing and living with the new Turneffe Atoll Marine Reserve.

- **Chumbe Island Coral Park, Zanzibar**

A study of four different MPAs around the Indian Ocean island of Zanzibar (which is part of Tanzania) concluded, "As in the rest of the world, MPAs work best when there is local benefit and cooperation; when local communities feel they bear the cost of reduced access to fisheries but do not see much benefit, there is little cooperation and MPAs fail to protect the ecosystem."⁵⁹ Zanzibar's most successful MPA, the study states, is the Chumbe Island Coral Park (CHICOP), a reserve that supports its activities through a small ecotourism lodge located on a coral rag island eight miles off the coast of Zanzibar.

⁵⁶ Cooper et. al., "Executive Summary," *Coastal Capital*, n.p.

⁵⁷ Ibid.

⁵⁸ Author's interview, April 2012.

⁵⁹ Helena Naber, Glenn-Marie Lange, and Marea Hatzios, *Valuations of Marine Ecosystem Services: A Gap Analysis*, UNEP/WCMC, July 2008, p. 47.

Reputed to be the world's first private marine reserve, Chumbe began in 1991 as the brainchild of Sibylle Riedmiller, a German conservationist and former international development assistance official based in Tanzania. At the insistence of Riedmiller, local authorities made the protected area a "no-take" zone, a decision that was opposed by local fishermen who had traditionally fished among these coral reefs and used the island for drying fish and nets and for shelter during storms. Fishermen expressed strong disagreements about the boundary of the "no-take" zone around the coral reef, concerns about granting a foreigner a 33-year lease to the island, and fears that creating a private reserve could limit fishermen's access and hurt their livelihoods.

However, particularly after 2001, CHICOP began, in coordination with the Ministry of Education, involving both local villagers and students in environmental educational programs which include school trips to Chumbe



Chumbe Island Resort

Island to provide (<http://static.guim.co.uk/sys-images/Travel/Pix/pictures/2006/05/15/chumbe360.jpg>) secondary school students and teachers with hands-on experience in the marine park. Thousands of Zanzibaris have participated in these field trips which represent Tanzania's first environmental education program focused on coral reefs for local schools.⁶⁰

The Chumbe marine park employs an estimated eight park rangers (who also serve as guides for tourists), while the lodge employs an on-site lodge manager, and technical maintenance, cooking, and cleaning staff, all of whom are native Tanzanians. The park rangers are former fishermen who have been trained in park management and monitoring techniques for the reef. Data collected since the early 1990s show that the incidence of illegal fishing decreased fourfold between 1994 and 2004, while fish size and marine diversity has increased in Chumbe's waters.⁶¹

While old grudges die hard and clearly more should have been done initially to involve fishermen in the creation of the MPA, these educational programs, together with jobs

⁶⁰ Martha Honey, *Ecotourism and Sustainable Development: Who Owns Paradise?*, Island Press, Washington, DC, 2008, pp. 274-275.

⁶¹ *Ibid.*, p. 274.

provided by CHICOP and the lodge, and the increasing abundance of fish, lobsters, and corals, including in fishing areas on the edges of the reserve (where fishing is still permitted), have helped to demonstrate to Zanzibaris the economic value of this MPA.

Scientific monitoring surveys of the Chumbe Island Coral Park reveal that the protection of the reef since 1992 has resulted in levels of coral growth and diversity that are among the highest in the region and are greater than in non-protected areas around Zanzibar. In addition, studies have found that some fish and crustacean families, including Giant Grouper and lobster, are “of a greater size and abundance inside Chumbe’s protected area compared to other reefs on the west coast of Zanzibar.”⁶²

Chumbe Island Lodge has also become Zanzibar’s most celebrated ecotourism destination. The occupancy rate has grown from just 13% in the late 1990s to some 60% today, as travelers, scientists, and student researchers have been attracted from around the world to this remote destination. Over the years, Chumbe Lodge has won numerous international awards for sustainable design, construction, and operations, including *Conde Nast Traveler* magazine’s best “Ecotourism Destination” award, UNEP’s “Outstanding Environmental Achievement” award, and Trip Advisor’s “Traveler’s Choice 2012 Winner” for all inclusive hotels in Africa.⁶³ Its seven vaulted eco-bungalows and visitor center are based on state-of-the-art eco-architecture and eco-technology.⁶⁴ The lodge is situated back from the beach, inside the island’s forest, to maximize natural cooling (there is no air-conditioning) and minimize damage from storms. All construction was done with local materials and environmental impact is minimized by use of photovoltaic energy, rainwater catchments (there’s no ground water source on the island), composting toilets, and grey-water vegetative filtration.

The Chumbe Island Lodge has become an international model for sustainable construction and operations on a small and fragile island, while its profits have been used to underwrite the cost of managing the marine protected area and the educational programs.⁶⁵ As one academic study concluded, “Overall, protection of the Chumbe reef and the introduction of ecotourism have had a positive effect on the private sectors, the Government, researchers, students, school children, teachers and tourists. In particular,

⁶² Chumbe Island Coral Park “Research and Monitoring”, website: <http://www.chumbeisland.com/reef-sanctuary/research-surveys-and-monitoring/>.

⁶³ Chumbe Island Coral Park awards, website: <http://www.chumbeisland.com/home/awards-links/>.

⁶⁴ Chumbe Island Coral Park accommodations, website: <http://www.chumbeisland.com/accommodation/eco-accomodation-zanzibar/>.

⁶⁵ Honey, *Who Owns Paradise?*, pp. 274-275.

CHICOP has provided educational, research and conservational benefits to Zanzibar.”⁶⁶

The ecolodge has met its owner’s goal of using the income from ecotourism to fully fund and manage the protected area. Sybille Reidmiller is clear that she has always been more interested in marine conservation than in ecotourism: “My vision was not ecotourism, but marine conservation and the environmental education,” she said in an interview. “Tourism income was only meant to be instrumental for that.”⁶⁷

- **Cabo Pulmo National Park, Mexico**

Similar evidence of the potential benefits of MPAs has been recorded in the Cabo Pulmo National Park (CPNP), a marine reserve created in 1995 to protect 7,111 hectares off Mexico’s Baja California Sur, about an hour north of Los Cabos. Described as the “world’s most robust marine reserve” and the only living reef in the Gulf of California, it includes a 20,000-year-old coral reef, the oldest reef in the Americas, and at least 226 of the 875 fish species that live in the area. In 2005, UNESCO declared Cabo Pulmo a World Heritage Site and in 2008, Cabo Pulmo was added to the list of RAMSAR Wetlands of International Importance.⁶⁸ The results of a 10-year scientific analysis of Cabo Pulmo found that the number and size of fish in the reserve ecosystem (the “biomass”) boomed more than 460% between 1999 and 2009.⁶⁹

The Cabo Pulmo success story demonstrates the importance of local support, not only for the initial establishment of the reserve, but also for the ongoing vigilance required to protect the reserve. In the early 1990s, the 80-odd families living along the nearby coast began lobbying the government to create a reserve after they noticed that fish stocks were declining. A primary cause of this decline was the common practice of commercial fishing boats to drag their nets through the coral, damaging the reef and

⁶⁶ Kjersti Thorkildsen, “Socio-Economic and Ecological Analysis of a Privately Managed Marine Protected Area: Chumbe Island Coral Park, Zanzibar,” Master’s thesis, Norwegian University of Life Sciences, Department of International Environment and Development Studies, Oslo, Norway, May 2006, p. vii, quoted in Honey, *Who Owns Paradise?*, p. 275.

⁶⁷ Honey, *Who Owns Paradise?*, p. 273.

⁶⁸ Scripps News, “Hidden Baja Undersea Park is the World’s Most Robust Marine Reserve,” Scripps Institution of Oceanography, University of California, San Diego, August 12, 2011, website: <http://scrippsnews.ucsd.edu/Releases/?releaseID=1180/>; Paulina Perlin, “Mexican Standoff: The Fight to Keep Cabo Pulmo Safe From Developers,” November 29, 2011, GreenAnswers.com, website: <http://greenanswers.com/blog/268321/mexican-standoff-fight-keep-cabo-pulmo-safe-developers#ixzz1xc2KFCvR>).

⁶⁹ Scripps News, “Hidden Baja Undersea Park.”

driving fish deeper into the ocean. In 1995, the government agreed to establish a marine protected area.

Over the years, local residents strictly enforced the reserve's "no take" restrictions and



Cabo Pulmo: <http://www.cabosanlucasbeaches.com/cabopulmo.htm>

the reef gradually recovered.⁷⁰ According to one scientific study, Cabo Pulmo “is the only well enforced no-take area in the Gulf of California, Mexico...”. The study, by scientists from the Scripps Institution of Oceanography, credited the success to two main factors: its large “no-take” core area and active support and continuing vigilance by local residents. The Scripps scientists found that the “no-take” zones in the other nine MPAs in the Gulf of California ranged from zero to 16.3% of the area covered by such MPAs, while Cabo Pulmo had, at its creation, 35.1% of the reserve designated as a no-take zone. And, the size of this no-take area has continued to expand: by 2009, the Scripps scientists reported, the no-take reserve had “expanded to include nearly 100% of CPNP’s area”, thanks to “the determined action of local families...”.⁷¹

⁷⁰ Ibid.

⁷¹ Octavio Aburto-Oropeza, et al, “Large Recovery of Fish Biomass in a No-Take Marine Reserve,” *PLoS ONE*, vol. 6, issue 8, August 2011, p. 2.

Many local residents, in turn, shifted from fishing to ecotourism, with small accommodations offering dive and snorkeling tours on the reef. The 2011 Scripps study found that the “success of CPNP is greatly due to local leadership, effective self-enforcement by local stakeholders, and the general support of the broader community.” Comparing Cabo Pulmo to other MPAs in the Gulf of California, the study concluded, “Protected areas with locally managed resources and stakeholder buy-in can be more successful than areas with top down, federally mandated preservation.”⁷²

Then in 2007, residents learned that a Spanish development conglomerate, Hansa Urbana, had bought land with plans to build a mega-resort at Cabo Cortes, adjacent to the Cabo Pulmo Marine Park. The Cabo Cortés project envisioned “a massive development that would plant 30,000 hotel rooms – the equivalent of a new Cancun -- on the sand dunes, along with a marina for 490 boats, shopping centers and two golf courses.”⁷³ In 2008, Mexico’s Ministry of Environment and Natural Resources (SEMARAT) approved the environmental impact statement for the initial stage of the Cabo Cortes project, and in 2011, the Ministry approved the project again, but with more environmental conditions.

In response, local residents together with a loose coalition of leading marine scientists and international environmental organizations (including World Wildlife Fund, National Resources Defense Council, Oceans Futures Society, Greenpeace, and Waterkeeper Alliance) mounted a campaign to stop the Cabo Cortes project. Press coverage of the controversy grew, and, in 2011, 22 scientists sent the Director of UNESCO’s World Heritage Committee a letter warning, “The need to act is urgent.” The letter stated:

The influx of tourism and population growth of a project of this magnitude will bring overwhelming pollution and greater pressure on Cabo Pulmo’s marine and coastal ecosystems. The vulnerability of corals to human activity and pollution is well-documented, as they are sensitive to changes in water quality, salinity, turbidity and temperature. Sand dredging during construction of the marina and breakwater, fertilizers and chemicals used on the golf courses, discharge from the desalination and water treatment plants, and pollution from the marina’s boats and increased human population would dramatically alter the area ecologically. Cabo Cortés’s proposal also includes major infrastructure in sand dunes, which would damage the coastline and result in beach erosion of vital sea turtle nesting sites. In our opinion, this development could cause irreversible harm

⁷² Ibid., p. 4.

⁷³ SFGate.com, Christine Delsol, “Cabo Pulmo’s Fight to Save ‘the World’s Aquarium,’” April 2, 2012, website: http://www.sfgate.com/cgi-bin/article.cgi?f=/g/a/2012/03/28/mexico_mix_cabo_pulmo.DTL.

to this unique and vulnerable reef and is inconsistent with its protected status.⁷⁴

The World Heritage Committee responded by sending an investigative mission to research the potential damage large tourism projects could cause to Cabo Pulmo. They placed Cabo Pulmo on the List of World Heritage Sites in Danger and requested that the Mexican government protect Cabo Pulmo by rejecting Cabo Cortés and other detrimental large resort proposals. In May 2012, the Mexican government opened inquiries into the approval by SEMARNAT, and in June, President Felipe Calderon made a surprise announcement that he was cancelling the project because, he said, there was no "absolute certainty" that the large-scale resort development "will not cause irreversible damage" to the environment. Calderon explained that because Cabo Pulmo is "such an important area for the Gulf of California and the country ... we should all be absolutely certain that (the project) will not cause irreversible harm and that absolute certainty simply has not been generated."⁷⁵ While Calderon's decision was initially welcomed by the local community and national and international environmental organizations, it quickly became evident that the announcement, made just before a G20 Summit of world leaders in Los Cabos, was largely a publicity stunt aimed at quelling dissent and projecting Mexico as a champion of "green growth." Less than a month after Calderon cancelled the project, a new development of essentially the same magnitude was proposed – and the citizen coalition again began organizing to block it and offer, instead, plans for a truly sustainable coastal tourism project.⁷⁶

As the Scripps study points out, the success of the Cabo Pulmo marine park indicates "that community-managed marine reserves are a viable solution to [both] unsustainable coastal development and fisheries collapse in the Gulf of California and elsewhere."⁷⁷ The Cabo Pulmo marine reserve has not only significantly increased the size and stocks of fish but has also helped to shift the local community towards ecotourism as a sustainable type of coastal development. One of its key lessons is that local stakeholders must remain continually involved and proactive to prevent unsustainable developments – of either large scale commercial fishing or mass tourism.

⁷⁴ Letter dated May 23, 2011 to Mr. Kishore Rao Director, UNESCO World Heritage Centre, website: http://www.cabopulmovivo.org/portal/documents/Cabo_Pulmo_scientists_letter_-_director_rao.pdf.

⁷⁵ Fox News Latino, "Mexico Cancels Controversial Mega-Resort Project," June 15, 2013, website: <http://latino.foxnews.com/latino/news/2012/06/15/mexico-cancels-controversial-mega-resort-project/#ixzz1zwm7geZd>.

⁷⁶ Talli Nauman, Coastal Development Threatens Mexican Reef," America's Program, August 3, 2012, website: <http://www.cipamericas.org/archives/7685>. Additional information from CREST participation in the citizen's coalition.

⁷⁷ Aburto-Oropeza, "Large Recovery of Fish Biomass," Abstract.

- **The Maldives**

The Maldives is a sea level atoll nation in the Indian Ocean nation encircled by coral reefs and covered with lush vegetation including coconut palm and banyan trees. It has the unfortunate distinction of being one of the countries most endangered by climate change. Its land base, spread across some 1200 tiny emerald green islets, barely rises above the sea: maximum elevation is 2.3 meters. While many of the Maldives islands are uninhabited, indigenous people live on about 200, and on others international hotel brands have been opening luxury eco-resorts catering primarily to wealthy Westerners.⁷⁸

Over the last century the sea level around the Maldives has raised 20 cms. As a British scientific magazine, *Geographical*, explained, “[I]t’s clear that climate change could have tragic consequences for the world’s flattest country. Coral is the archipelago’s only line of defence against surges of wind and tide, and although it’s highly effective at diffusing the sea’s energy, it can’t stop islands being simply washed away when there are exceptional weather events.”⁷⁹ Given its precarious position, the Maldives government, together with its tourism industry and local communities, has been responding with a range of initiatives.

At the Rio+20 UN Conference on Sustainable Development held in Brazil in June 2012, the Maldives announced plans to create the world’s largest MPA, which will bring all 1,192 islands into a marine reserve by 2017. In making the announcement, President Mohamed Waheed declared that the Maldives will be “*the first country* to become a marine reserve” because all of its low lying Indian Ocean islands and the waters surrounding them are to be incorporated into the new reserve. “This policy will allow only sustainable and eco-friendly fishing. It will exclude deep-sea, purse-seining and



78 “p
http:
79 lb

other destructive techniques," the President said.⁸⁰

This new marine reserve marks the latest in a series of actions taken to try to mitigate the impacts of climate change as well as the damages caused by resort and other types of development. By the mid-1990s, the increasing population and new developments, including tourism-related ones, had created a threat to the marine environment. Activities such as sand and coral mining, waste disposal and fishing are degrading the fragile and vulnerable marine life. On the other hand, non-consumptive tourism was proving beneficial. A 1992 government study found, for instance, that divers were spending \$2 million a year to watch sharks in the Maldives, and a living shark was calculated to be worth 100 times more than sharks caught or killed by fishermen. These realities helped to spur the creation of some 15 marine parks in the Maldives, which banned commercial and recreational fishing (other than catch and release fishing) and any other activity that could damage the area or its marine life.⁸¹

Given the Maldives's fragile ecosystem, environmental awareness has been at the forefront of development and operations of many of the resorts on the islands/atolls. In recent years, resorts on the Maldives are designed, constructed and operated in order to minimize their footprint and maximize protection from sea-level rise and increasing numbers of fierce and erratic storms. For instance, Banyan Tree, a high-end boutique resort company based in Singapore, has four properties in the Maldives. Its Angsana Ihuru resort was built with "prefabricated villa elements imported by light boat to protect fragile coral reef while maximizing natural air and lighting, with no air conditioning installed in common areas to reduce electrical consumption onsite."⁸² Its newest resort, Banyan Tree Madivaru features six, low-impact tented villas. During its construction, no large trees were removed and any smaller ones, when necessary, were transplanted to other parts of the property.⁸³

In 1999, the Maldives tourism ministry began giving an annual "green resort award." Two Banyan Tree properties, Vabbinfaru and Angsana Ihuru, have won these awards. Two Banyan Tree resorts have also been benchmarked at the bronze level by EarthCheck, an international sustainable tourism certification program, and the other

⁸⁰ Helene Hofman, "Rio +20: Maldives announces world's biggest marine reserve," *Global Post*, website: <http://www.globalpost.com/dispatch/news/regions/asia-pacific/120620/rio-20-maldives-announces-worlds-biggest-marine-reserve>.

⁸¹ "Protected Marine Areas in the Maldives," *Bluepeace*, website: <http://www.bluepeacemaldives.org/protectedmarinesites.htm>.

⁸² "Our Eco Resorts: Angsana Ihuru," Banyan Tree Global Foundation, website: http://www.banyantreeglobalfoundation.com/our_eco_resorts/maldives/ihuru

⁸³ "Our Eco Resorts: Madivaru," Banyan Tree Global Foundation, website: http://www.banyantreeglobalfoundation.com/our_eco_resorts/maldives/madivaru.

two are going through the certification process. As part of its environmental programs, Banyan Tree's Vabbinfaru and Angsana Velavaru properties have started marine research laboratories that carry out a range of projects including turtle conservation, coral transplanting and spawning, reef regeneration, reef and lagoon cleaning, and environmental education programs for local communities and hotel guests.⁸⁴ Banyan Tree's website states that the company believes its resort-based marine labs can "set the tone for a new ethos within the tourist industry; whereby resorts provide additional opportunities for community involvement while also preserving local ecologies." These marine labs count among their successes the recording (for the first time in the history of Maldives) the spawning of Acropora corals in the reefs of Banyan Tree Maldives Vabbinfaru and Angsana Maldives Ihuru resorts.⁸⁵

Banyan Tree finances these research stations and other environmental and social projects through its Green Imperative Fund. This fund collects guest contributions under an "opt-out" arrangement, which adds \$1 or \$2 for each night spent at one of the participating resorts. These donations are matched, dollar for dollar, by Banyan Tree.⁸⁶

Other resorts in the Maldives also have robust environmental and social programs. For example, Four Seasons Resort Maldives at Landaa Giraavaru, is located within the Baa Atoll which is a UNESCO World Biosphere Reserve. The resort includes a Marine Activity Center, staffed by marine biologists. The center allows hotel guests to participate in educational lectures and conservation programs, including reef building, reef regeneration, and a "fish lab" which is working to "cultivate a sustainable aquaculture of ornamental fish that can be developed, in time, to create an alternative source of income for local communities."⁸⁷

As of this writing, a total of nine resorts in the Maldives have been certified or benchmarked by EarthCheck, at either the bronze or silver levels. To meet EarthCheck's Company Standard, a resort must satisfy a range of environmental and social indicators. For instance, Six Senses, which developed an environmental program for its Maldives' Soneva Fushi resort in accordance with EarthCheck's guidelines, has set the following annual sustainability goals:

- Cutting greenhouse gas emissions by reducing energy consumption, increasing energy efficiency, and implementing renewable energy schemes;

⁸⁴ "Our Eco Resorts: Vabbinfaru," Banyan Tree Global Foundation, website: http://www.banyantreeglobalfoundation.com/our_eco_resorts/maldives/vabbinfaru.

⁸⁵ "Our Projects: Vabbinfaru," Banyan Tree Global Foundation, website: http://www.banyantreeglobalfoundation.com/our_projects/labs/bt_vabbinfaru.

⁸⁶ "Righting Wrongs on the Reef."

⁸⁷ Four Seasons, website: http://www.fourseasons.com/maldiveslg/services_and_amenities/other_facilities_and_services/Marine_discovery_centre/.

- Reducing resource consumption and waste generation through waste-reducing purchasing policies, re-use, recycling and composting programs;
- Preventing any escape of harmful substances into the environment;
- Preserving the fragile island and coral reef ecosystem by avoiding air and water pollution, physical damage and overfishing;
- Engaging local communities, preserving traditional skills of local islanders and actively employing local staff, service providers and suppliers wherever practicable;
- Raising awareness for sustainable tourism and living amongst hosts, guests, local communities and suppliers through training programs and regular environmental awareness event.⁸⁸

Through actions such as these the Maldives offers a powerful case study that a positive symbiotic relationship can be created and nurtured among marine zones, local communities, government, and environmentally and socially responsible resorts. The Maldives' newly announced nationwide marine reserve serves as a capstone for its numerous sustainability initiatives. While many of these initiatives have been driven by the country's imperative to act to mitigate the impacts of climate change, they are also resulting in greater protection of the marine and terrestrial ecosystems, more sustainable tourism development and management, and greater benefits for the local population in the Maldives.

- **Lessons for Turneffe Atoll Marine Reserve**

Studies of successful MPAs in other parts of the world highlight a number of lessons that appear useful for Turneffe Atoll's new marine reserve. Research has shown that well managed MPAs lead to rejuvenation of both coral and fish stocks inside the reserve and spill over areas around the protected areas. "Studies have stated that the 'catch-per-unit-effort' (CPUE) is higher close to reserve borders, meaning that the number of fish caught close to the protected area is higher than further away from the reserves," states a 2007 analysis of MPAs.⁸⁹

Successful MPAs demonstrate that fish stocks increase more quickly *if the no-take zone is sufficiently large*. The optimal size must be determined, of course, based on the particularities of each reserve – its size, species and quantities of fish, corals, sea

⁸⁸ Six Senses, website: <http://www.sixsenses.com/soneva-fushi/Environment/Social-Sustainability-Policy.php>.

⁸⁹ Charlotte Johansson, "The Importance of Marine Protected Areas (MPA's)," January 1, 2007.

grasses, mangroves, and other factors. According to a recent study on the status of coral reefs and fish stocks within MPAs, “An important question in designing MPAs for reef ecosystems is what level of fishing restriction inside MPAs is necessary to obtain increased size and abundance of reef fish species.” The study concludes, “Rapid rebuilding of reef fish populations requires no-take areas. When some forms of [extractive] fishing are allowed inside the MPA, rebuilding is a slower process, especially for the larger reef fish species.”⁹⁰

While it is beyond the scope of this paper and the author’s expertise to assess whether the no-take area in the new Turneffe marine reserve is sufficient to rebuild fish stocks, it seems important to raise the question since, as proposed, commercial fishing (with a number of restrictions) is allowed in about 85% of the Turneffe reserve. It is especially important to carefully monitor the status of the fishery needs since most commercial fishermen are currently supporting the new Turneffe MPA because they believe it offers the possibility of reversing the decline in lobster and conch stocks. As one professional fisherman stated, “There’s been a steady decline in the last ten years in the catch and an increase in the number of fishermen. An MPA will improve our fishing catch, cut down on illegal, unlicensed, out-of-season and undersized fishing. It will help to increase the stock of lobster and conch.” In another interview, a fishing cooperative official explained, “Fishermen held up the Turneffe MPA for 20 years. They resisted until they have no choice, but now they see they will benefit from a well managed MPA.”⁹¹ A 2012 survey of fishermen at Turneffe found “significant support exists for a Turneffe Atoll Marine Reserve” and “overwhelming support for improved enforcement...”⁹²

If fish stocks do not increase quickly, commercial fishermen’s support for the new MPA may erode. In fact, a second lesson to be drawn from successful MPAs is that local stakeholders, most importantly the local fishing community, must actively support and tangibly benefit from the Marine Reserve.

In addition, as the case of the Cabo Pulmo MPA in Mexico demonstrates, local stakeholders must remain continually involved and proactive to prevent unsustainable developments – of either large scale commercial fishing or high volume tourism. Since its creation, the Cabo Pulmo reserve has not only significantly increased fish stocks but has also helped to shift the local community towards ecotourism as a sustainable type of coastal development. When plans for a mega-resort at Cabo Cortes threatened the

⁹⁰ Divya Varkey, Cameron H. Ainsworth, and Tony J. Picher, “Modelling Reef Fish Population Responses to Fisheries Restrictions in Marine Protected Areas in the Coral Triangle,” *Journal of Marine Biology*, Vol. 2012, pp. 1, 12.

⁹¹ Author’s interviews, April 2012.

⁹² Hayes, “Turneffe Atoll Fishery,” p. 7.

future of both the marine park and the local ecotourism businesses, local stakeholders joined forces with international NGOs and scientists in opposition. The Mexican President's decision in June 2012 to cancel the Cabo Cortes project illustrates the importance of building an effective broad-based coalition of stakeholders who can both monitor developments locally and raise concerns nationally and internationally.⁹³

Turneffe Atoll has a range of stakeholders with economic, administrative, and scientific interests in a marine reserve. Because there is no town counsel or other governmental entity representing Turneffe's stakeholders, they have formed, over the years, a series of organizations, some more effective than others. These have included the Turneffe Islands Coastal Advisory Committee (TICAC), the Turneffe Atoll Coastal Advisory Committee (TACAC), and the Turneffe Atoll Sustainability Council (TASC). These committees have been composed of Turneffe Atoll stakeholders, implementing governmental agencies, and relevant non-governmental agencies. The 2011 *Turneffe Atoll Marine Reserve Management Plan* lists a range of 14 different stakeholder groups with an interest in Turneffe, including five government agencies (Fisheries, Forestry, Environment, Geology, Belize Tourism Board), the fishing sector, tourism, caye developers, academics, and conservation organizations.⁹⁴ It is essential that the participatory, transparent, and democratic processes developed to date continue now that the marine reserve is officially established.

A third lesson from these case studies is that the tourism sector can play an important role in creating, monitoring, and financing the Marine Reserve, as well as in educating both travelers and local communities about its importance. Turneffe Atoll Trust, with its ties to Turneffe Flats Resort, appears to be particularly well positioned to play this role. As the Maldives illustrates, resorts can play a range of roles from scientific monitoring, and guest and community education, to organizing projects such as coral replanting, turtle conservation, and lagoon and beach clean-ups. Several of the Maldives resorts finance social and environmental initiatives through soliciting donations from guests and matching these with corporate contributions. Resorts in the Maldives are attracting high-value travelers who, as elaborated below, are interested in learning about and contributing to the protection of the destination.

A well-functioning MPA is a "win-win" for environmentally sustainable and socially responsible tourism, as well as commercial fishing. Indeed, these case studies demonstrate that the local commercial fishermen and responsible, sustainable tourism

⁹³ The Cabo Pulmo controversy continues, with the Spanish developer presenting plans for another version of the mega-resort and the citizens coalition trying to develop an alternative model for a resort that would be an appropriate size and sustainably built.

⁹⁴ Wildtracks, *Management Plan*, p. 37.

businesses should work together to both support and benefit from well-managed marine reserves.

Turneffe has a successful and largely sustainable tourism industry based on three non-extractive activities: catch and release sport fishing, diving, and ecotourism, and there is potential for these activities to be gradually and carefully expanded. However, the Atoll faces threats not only from the decline in commercial fishing but also from a lack of control over tourism construction and other development. Creation of the new Marine Reserve is seen as a major step towards sustainable development, but it must be accompanied with clear enforcement of Belize's regulations for tourism developments as well as adherence to internationally recognized best practices for sustainable tourism.

4. Ensuring Sustainable, High Value Tourism at Turneffe Atoll

While Turneffe Atoll attempts to deal with the threats posed by declining commercial fishing and unsustainable tourism developments, its decisions are also informed by trends both within Belize and the global tourism industry. The growth of resorts, vacation homes, and cruise tourism in Belize's coastal areas is part of a global pattern of development of coastlines and islands for tourism. Tourism based on sun, sand, and sea is the largest, fastest growing, and most lucrative sector of the tourism industry. Globally, 12 of the 15 top international destinations are countries with coastlines, and in the U.S., three coastal states (New York, Florida and California) hosted 74% of total overseas visitors. In Europe, 63% of vacationers prefer the coast as compared to 25% who favor mountains and another 25% who prefer cities.⁹⁵ In Central America and the Caribbean, coastal resort and residential tourism is closely tied to the U.S. market and characterized by destinations that are within a few hours flight from key U.S. cities. These trends are expected to continue, as increasingly urbanized populations in the U.S., Europe, and Asia seek nature, particularly coastal sun, sand, and sea destinations.

- **Tourism in Belize**

Tourism is the number one foreign exchange earner in Belize. According to the Central Bank, "The economy expanded 2 percent in 2011, as tourism and services accounted

⁹⁵ United Nations Environment Programme (UNEP), *Sustainable Coastal Tourism: An Integrated Planning Process and Management Approach*, UNEP Manuals on Sustainable Tourism, 2009, p. 11.

for 55 percent of GDP.”⁹⁶ Tourism is expected to grow nearly 35% between 2010 and 2021. In 2010, tourism was estimated to be providing 39,000 jobs, and this is expected to increase to 61,000 jobs by 2021⁹⁷ Belize’s tourism market is dominated by visitors from the U.S. The American market represents just over 60% of all international overnight arrivals, while Canadians account for 7%, Europeans 14%, and Latin Americans 11%. According to the *Turneffe Atoll Marine Reserve Management Plan*, “Turneffe Atoll is considered an important tourism resource for the upper end tourism resorts based on the Atoll itself, and for San Pedro and Belize City.”⁹⁸

The number of overnight visitors for all of Belize increased 20% between 2002 (200,000) and 2011 (250,263). Overnight arrivals in 2011 were 3.4% higher than in 2010 and “the second highest on record after the peak in 2007.” According to the Belize Tourism Board (BTB), this demonstrated that Belize has recovered from the global economic recession which began to adversely affect international arrivals beginning in 2008.⁹⁹

Figure 7: Overnight Tourism Arrivals in Belize¹⁰⁰

Country	2000	2003	2004	2005	2006	2007	2008	2009	2010	2011
Belize	195,766	220,574	230,832	236,573	247,309	251,422	245,026	232,000	239,000	250,263

In 2012, tourism is expected to grow by over 6%, attracting 264,000 international tourist arrivals, its highest number ever. According to the World Travel and Tourism Council (WTTC), Belize’s tourism horizon looks “very promising” for the decade running from 2009 to 2018. The WTTC ranked Belize among the top ten countries in the world expected to increase employment and attract direct foreign investment fastest within its tourism industry.¹⁰¹

Belize is internationally recognized for its outstanding natural and cultural tourism. Its tourism has been characterized by small ecolodges, which are independently owned by

⁹⁶ Ye Xie and Adam Williams, “Worse than Argentina debt offer rejected by Belize bond holders,” *The Reporter*, Sunday, August 26, 2012.

⁹⁷ Central Intelligence Agency, *The World Factbook. Central America and the Caribbean: Belize*, website: <https://www.cia.gov/library/publications/the-world-factbook/geos/bh.html>.

⁹⁸ Wildtracks, *Management Plan*, p. 165.

⁹⁹ Belize Tourism Board. *Travel & Tourism Statistics, 2008*, p. 8; Belize Tourism Board, Press Release, “BTB Unveils Its 4th Quarter Report: Overnight and cruise arrival figures make history,” February 15, 2012, website: <http://www.travelbelize.org/wp-content/uploads/2012/03/BTB-Unveils-4rth-Quarter-Report.pdf>.

¹⁰⁰ World Bank, website: <http://search.worldbank.org/all?qterm=Belize%20tourism> and Travel Belize, website: <http://www.travelbelize.org/wp-content/uploads/2012/03/BTB-Unveils-4rth-Quarter-Report.pdf>.

¹⁰¹ Belize Tourism Board, *Travel & Tourism Statistics 2008*, website: <http://www.belize tourism.org/>.

Belizeans and non-Belizeans. Over 60% of tourists to Belize take part in marine activities during their stay.¹⁰² Snorkeling is the most popular activity, accounting for 50%, followed by diving (27%) and sport fishing (16.5%).¹⁰³ Coral reef and mangrove associated tourism contributes \$150 million to \$196 million to the national economy. Sport fishing in Belize, which is predominantly catch and release, generates \$21.4 million in direct income per year.¹⁰⁴

Most dramatic has been the growth of cruise tourism. Cruise ships first began calling at Belize in the late 1990s and since 2002, the number of cruise passengers has greatly surpassed the number of overnight visitors; in 2011, Belize received 724,544 cruise passengers, equal to 74% of all international tourist arrivals.¹⁰⁵ While cruise tourism has

Figure 8: Cruise Passenger Arrivals in Belize¹⁰⁶

Year	1998	2000	2002	2003	2005	2007	2008	2009	2010	2011
Belize	14,183	58,131	319,690	575,196	800,331	624,128	597,370	705,219	764,628	724,544

fluctuated rather erratically, the data suggest that the number of cruise passengers will continue to be considerably greater than the number of stay over tourists.

A 2005 CREST study found, each cruise passenger spends only about \$44 per day, compared with the average daily expenditure by overnight visitors of \$96. Since overnight visitors stay an average 6.8 days and spend \$653 in Belize, these tourists are generating 14 times as much revenue per person as are cruise passengers.¹⁰⁷ As stated earlier, overnight tourists who stay overnight at Turneffe are even more valuable: they spend some 29 times more per person than does a cruise passenger who does a diving tour at Turneffe.

- **Turneffe and Global Tourism Trends**

¹⁰² Fedler, *Economic Value: Full Report*, p. 1.

¹⁰³ Based on Cooper et. al., *Coastal Capital*, cited in Fedler, *Economic Value: Full Report*, p. 2.

¹⁰⁴ Wildtracks, *Management Plan*, p. 4.

¹⁰⁵ "Statistics and Market Research," Caribbean Tourism Organization, OneCaribbean.org, website: <http://www.onecaribbean.org/>.

¹⁰⁶ *Cruise Tourism in Belize*, pp. 24-25; "Belize Tourism Board, Statistical Institute of Belize," Caribbean, Individual Country Statistics, Website:

<http://www.onecaribbean.org/content/files/Strep1AnguillaToBonaire2010.pdf>;

¹⁰⁷ *Cruise Tourism in Belize*, p. 10.

The future of sustainable tourism in Turneffe is being shaped not only by government policies, Belize's international tourism image, and the realities of the Atoll itself, but also by trends in international tourism. At present, Turneffe's tourism attracts a relatively small numbers of high value visitors who engage in non-extractive marine-based activities. As described above, the most economically beneficial are tourists who stay average a week at one of the Atoll's three lodges, followed by those who visit Turneffe with tour boats, spending, on average, just over two days diving or fishing at sites within the Atoll. Least beneficial are the cruise tourism visitors who spend less than a half day diving or snorkeling at Turneffe, and whose contribution to the Turneffe economy is limited to about half the cost of the excursion as charged by the cruise lines.

Global tourism trends indicate that *both* high value nature-based overnight tourism and *high volume* mass market cruise tourism are growing.¹⁰⁸ Therefore Belize, and Turneffe Atoll, have a choice whether to more actively promote either high value or high volume tourism, or to try, as is the current policy, to accommodate both. For Turneffe, at least, the recommended approach seems pretty clear. Cruise tourism brings the least economic benefits and if it grows, it may undermine or "crowd out" high value nature-based tourism at Turneffe. Rather, Turneffe's best option in terms of economic benefits, as well as environmental and social sustainability, is to carefully expand both the overnight capacity of the Atoll as well as the number of day visitors brought in from elsewhere in Belize. In addition, there is potential to expand educational tourism to the two research institutes at Turneffe and to create linkages between these scientific centers and the tourist sector. International consumer trends indicate a strong, long-term demand for ecotourism and educational tourism products and these are the types of tourism that will bring the most economic benefit to Turneffe.

The most suitable types of tourism for fragile island and atoll ecosystems like Turneffe are small-scale, low impact, and higher-end resorts that specialize in non-consumptive fishing, diving, snorkeling, and other marine and land-based activities. These ecolodges can – and should - be built in accordance with sustainable guidelines, such as those created by leading certifying organizations. It goes without saying that large, mass-market-oriented hotels and resorts are wholly inappropriate for Turneffe Atoll. Another opportunity for low-impact, economic development on the Atoll is educational and volunteer tourism run through the research centers or in conjunction with ecolodges.

¹⁰⁸ United Nations World Tourism Organization (UNWTO), "Global Forecasts and Profiles of Market Segments," *Tourism 2020 Vision*, 2001, Vol. 7, Madrid, Spain, p. 7.

- **Consumer Support for Sustainable Tourism**

In 2000, the UN's World Tourism Organization forecast that over the next two decades there would be a strong growth in what they termed "experiential" tourism.¹⁰⁹ While both the 9-11 terrorist attacks in 2001 and the global economic crisis beginning in 2008 significantly affected travel and travel patterns, research shows that there is a sizeable and growing cadre of consumers committed to sustainability -- even in difficult times. When, for instance, the U.S. market research group, CMI, asked responsible travelers how the global economic crisis would affect their travel plans, 54% of respondents reported taking a "greener" vacation within the last 12 months; 60% said they would maintain their level of "green" purchasing, while 30% said they planned to increase responsible purchases.¹¹⁰ "Green is no longer just a trend," says Fran Brasseur, executive director of the Hotel Sales and Marketing Association International (HSMIA) Foundation, "it's a way of life."¹¹¹

A meta-analysis of consumer and industry trends, published by CREST in January 2013,¹¹² demonstrates "increasing recognition among both travel professionals and consumers of the importance of responsible travel." Here is a sampling from recent surveys:

- 74% of *Conde Nast Traveler* (a popular U.S. travel magazine with a luxury angle) readers indicate that corporate responsibility policies influence their purchasing decision,¹¹³ and 44% of all US consumers consider environmental impact to be important when planning travel.¹¹⁴
- 96% of those who read *Conde Nast Traveler* believe that hotels and resorts should be responsible for protecting the environment.¹¹⁵
- More than 66% of all American and Australian tourists, and 90% of British travelers consider active protection of the environment, including support of local communities, to be part of a hotel's responsibility, according to the WTTC.¹¹⁶

¹⁰⁹ UNWTO, "Global Forecasts," p. 7.

¹¹⁰ CMI Community Marketing Inc, "Green Traveler Survey," San Francisco, CA, 2010, p. 5.

¹¹¹ "Responsible Travel Report," STI Partners with PhoCusWright and HSMIA Foundation, April 2008.

¹¹² Center for Responsible Travel, *The Case for Responsible Travel: Trends and Statistics*, Washington, DC, January 16, 2013, p.1, Website: [http://www.responsibletravel.org/news/Fact_sheets/Crest_RTI_TrendStats_print_1_4%20\(3\).pdf](http://www.responsibletravel.org/news/Fact_sheets/Crest_RTI_TrendStats_print_1_4%20(3).pdf).

¹¹³ Dorinda Elliott, "Ethical Traveler Index," *Conde Nast Traveler*, May 2007.

¹¹⁴ PhoCusWright, *Going Green: the Business Impact of Environmental Awareness on Travel*, 2009.

¹¹⁵ Elliott, "Ethical Traveler Index."

- 43% of people in the U.S. who identify themselves as at least “eco-conscious” are willing to pay a 5% premium for responsible travel, and 40% are willing to pay up to 10% more.¹¹⁷
- The UNWTO states that research “consistently find that between 10% and 15% of discretionary travellers want the unusual,” rather than large-scale, mass market tourism. These are the “alternative” or “new tourists” and growth from this group is out-speeding that of mainstream segments. These tourists are “typically highly educated, mature, affluent, well travelled, environmentally aware and sensitive to the social and cultural traditions, systems and mores of the destinations they visit.”¹¹⁸

One sector that is growing particularly rapidly is volunteer or service vacations or dubbed “voluntourism”¹¹⁹ -- and this is a market that Turneffe’s two research stations can more systematically tap into. Globally, participation in volunteer projects continues to rise:

- In Britain, 73% of adults participated in at least one volunteer activity in 2007.
- In Australia, 4.5 million people reported participating in volunteer activities in 2006.
- In the U.S. 60.8 million people volunteered in 2007.

Voluntourism has emerged from this increase in volunteering, as well as from shifts in tourism demands, especially for “experiential” learning activities as part of vacations. The two largest groups participating in voluntourism are college students and Baby Boomers who are now entering retirement. “Study abroad trips and international volunteering,” write one expert, “continued to be significant activities, particularly for college students and recently graduated individuals. What is new is the short-term volunteer experience. Shortened trips that incorporate both tourism and volunteering have developed over the last 10 years in order to accommodate the growing portion of

¹¹⁶ World Travel and Tourism Council (WTTC), *Travel & Tourism Economic Impact*, UK, 2010.

¹¹⁷ CMI Community Marketing Inc., “Green Traveler Survey,” 2010.

¹¹⁸ UNWTO, *Handbook on Tourism Product Development*, Madrid, Spain, 2011, p. 11.

¹¹⁹ A voluntourist is, according to one study, a person who volunteers “in an organized way to undertake holidays that may involve aiding or alleviating the material poverty of some groups in society, the restoration of certain environments, or research into aspects of society or environment.” Stephen Wearing, *Volunteer Tourism Experiences That Make a Difference*, CABI Publishing, 2002, quoted in *Travelers Philanthropy Handbook*, produced by CREST, 2011, p. 99.

the tourism market that seeks to ‘give back’ as part of their vacation experience.”¹²⁰ According to a 2009 *Conde Nast Traveler Readers’ Poll*, 47% of those who responded said they are interested in volunteer vacations and 98% of those who had volunteered said they were satisfied with their experience.¹²¹

Parallel with the growth of voluntourism is the rise of travelers’ philanthropy. According to the *Travelers’ Philanthropy Handbook*, “Travelers’ philanthropy is tourism businesses and travelers making concrete contributions of time, talent, and treasure to local projects *beyond what is generated through the normal tourism business.*”¹²²

As the Handbook explains, “Travelers’ philanthropy is not about collecting loose change for charities; rather, it is about integrating tourism company and visitor support for local communities into the core definition of responsible travel. It is also about:

- Helping tourism businesses become actively involved as ‘good citizens’ in their travel destinations.
- Assisting local projects that provide a ‘hand up’ not a ‘hand out;’ that is, projects that promote social empowerment, education, and entrepreneurship that lead to sustainable, long-term development and environmental conservation.
- Enriching the travel experience through meaningful, culturally sensitive, and productive interactions with people in host communities.

Done well, travelers’ philanthropy benefits the destination, the travel business, and the traveler.”¹²³ At Turneffe Atoll, contributions from visitors has potential to provide a significant revenue stream to support the Marine Reserve and assist sustainable commercial fishing through the funding of marine research, educational opportunities for fishermen, monitoring, enforcement, and other projects.

Like voluntourism, travelers’ philanthropy has been growing exponentially. Today, individuals represent the largest single source of philanthropic dollars. In the U.S., individuals contribute 75% of philanthropic dollars, totaling \$229 billion in 2007. By

¹²⁰ Kristin Lamoureux, “Voluntourism: An Overview,” In Martha Honey, editor, *Travelers’ Philanthropy Handbook*, CREST, Washington, DC and Stanford University, 2011, p. 100.

¹²¹ CondeNast Travelers Readers’ Poll, February 2009, quoted in *Travelers’ Philanthropy Handbook*, p. 113.

¹²² Martha Honey, “Origins and Overview of Travelers’ Philanthropy,” In *Travelers’ Philanthropy Handbook*, p. 3.

¹²³ Ibid, pp. 3-4.

2020, individual charitable giving in the U.S. is projected to exceed \$300 billion.¹²⁴ According to Euromonitor, a growing trend among North Americans, who may be time-starved but cash-rich, is to take luxury vacations that include some philanthropy along with relaxation.¹²⁵

A 2009 CMI Green survey found the following demand for travelers' philanthropy:

- 83.7% of travelers have donated between \$11 and \$500 to individuals or charitable organizations while traveling.
- 37.9% are most likely to give to an environmental or conservation project.
- 53.4% are most comfortable giving to a nonprofit in their home country that works in the country they are visiting.
- 32.3% are most likely to give to an education related project.
- 42.7% donated to individuals or organizations while traveling.¹²⁶

In a study of travelers' philanthropy in Costa Rica's Osa Peninsula, CREST found that two-thirds (64%) of the 73 tourists interviewed said traveling responsibly was very important or important to them, and over 80% said that it was important that their hotel be socially and environmentally responsible. In addition, 42 (58%) of visitors said they were willing to contribute on average \$68 more to support local projects in the Osa. This indicates strong support among visitors for the idea of travelers' philanthropy. However, at present only 6 of the 11 hotels whose managers were surveyed have travelers' philanthropy programs and only a few are directly soliciting contributions from visitors.¹²⁷

These trends demonstrate that there is a growing sector of the traveling public that is more discerning and demanding in their travel choices, and many are willing to pay more for vacations and contribute to local projects that fit their values. According to the UNWTO, "While we cannot expect all tourists and tourism stakeholders to become ambassadors for conservation and good environmental management, trends in contemporary tourism suggest that these issues are growing in importance within the international community and are of increasing interest as people move around the world, or visit places closer to home."¹²⁸

¹²⁴ About Charities," *Business Scene*, April 20, 2007, http://www.businessscene.com/view_article.php?a=1089&PHPSESSID=1ce3f8d7c80159b2314fb2c8299b6502

¹²⁵ World Travel Mart, *World Travel Market Global Trends Report*, 2008.

¹²⁶ CMI Green, *The CMI Traveler Survey 2009*, vol. 1, 2009.

¹²⁷ Laura Driscoll, Carter Hunt, Martha Honey and William Durham, "Executive Summary," *The Importance of Ecotourism as a Development and Conservation Tool in the Osa Peninsula, Costa Rica*. CREST, Washington, DC and Stanford University, 2011.

¹²⁸ UNWTO, *Communicating Heritage: A Handbook for the Tourism Sector*, Madrid, Spain, 2011, p. 19

- **Profile of Conscientious Travelers**

Consumer demand is on the rise for products that are seen as “organic”, “sustainable”, “environmentally friendly”, “green”, “fair trade”, or any other of several buzz words that imply care for the environment and for workers. The non-profit research group LOHAS (Lifestyles Of Health And Sustainability) has found that in the United States, consumers who are focused on health and fitness, the environment, personal development, sustainable living and social justice (known as conscientious consumers) number 41 million people, or 19% of U.S. adults.¹²⁹

Conscientious travelers are part of this “LOHAS pool.” The growth of this consumer group is being driven by a confluence of trends identified by CREST¹³⁰ that suggest that the demand for sustainable tourism is likely to remain strong into the future. These trends include:

- ✓ **Emergence of experiential tourism** - In 2001, the UNWTO identified “experiential” tourism (which encompasses ecotourism, nature, heritage, cultural, soft adventure tourism, rural and community tourism) as among the sectors expected to grow most quickly during the coming two decades.¹³¹ Experiential tourism is the opposite of mass tourism that traditionally focused on package tours and vacations with low levels of personal involvement. Experiential tourism *shows* rather than *describes*. It encourages visitors to actively participate in the experience and promotes activities that draw people outdoors, and into cultures and communities. In this sense it is very personal and individual. Essentially, experiential tourists seek memorable experiences.¹³²
- ✓ **Generational shifts** - The “**Baby Boom**” generation (those born between 1946 – 1964) are entering retirement and are finding themselves with more leisure time. There are, for example, almost 80 million Baby Boomers in the United States. They control 70-80% of the wealth, live longer, value more active

¹²⁹ Green Exchange, “Green Exchange Commentary: LOHAS Defined,” <http://www.greenexchange.com/Read/Green+Exchange+Commentary+-+LOHAS+defined>.

¹³⁰ CREST, *The Market for Responsible Tourism Products: With Special Focus on Latin America and Nepal*, 2009, Washington, DC and Stanford University, pp. 25-27.

¹³¹ UNWTO, “Global Forecasts.”

¹³² William L. Smith, “Experiential Tourism around the World and at Home: Definitions and Standards,” prepared for the *International Journal of Services and Standards*, Emporia State University, Emporia, Kansas, p. 5.

lifestyles including long-haul travel, and are increasingly aware of environmental issues. In addition, the “**Gen-Xers**” (the generation born between 1961 – 1981) are environmentally conscious and have embraced conscientious consumerism or “spending your way to a greener planet.” The “**Gen-Yers**” or “Millennials” (children of Baby Boomers born from the early 1980s to 2001) are generally extremely well informed, electronically savvy, like personal attention, and are passionate about environmental and social justice issues. Each generation influences the others and together they are driving demand for responsible tourism.

- ✓ **Need to connect with nature** - By 2010, half of the world population was living in cities, for the first time in human history. In response, urban workers are seeking to spend their leisure time in areas where they can ‘reconnect with nature’. Hiking, camping, wildlife viewing, snorkeling and Scuba holidays (all trending upward) offer a chance to escape from urban environments and busy work lives. Some urbanites, particularly younger ones, turn to active outdoor adventure travel to meet the need to reconnect with nature while maintaining their fast-paced lifestyle.
- ✓ **Demand for authenticity** - Modern consumers want authentic experiences.¹³³ According to the UNWTO, “The postmodern consumer’s search for experiences that are engaging, personable, memorable – and above all authentic is especially strong in respect of tourism.”¹³⁴ Contrived experiences created by tourism operators, theme parks, cruise lines, resorts, and so on that are based largely around consumption – eating, drinking, shopping, gambling, etc – and manufactured or mass produced entertainment are no longer favored by a growing number of travelers. Rather, consumers want to see the real thing and are savvy enough to easily tell the difference when something is not authentic.¹³⁵
- ✓ **Togetherness** – Families are taking three-generation journeys, with grandparents, parents, and children taking holidays together. They want to enjoy and spend time with one another, but also to have the opportunity to each do different things. They seek holidays offering a range of vacations.”¹³⁶
- ✓ **Search for fulfillment** - A final trend, the search for personal growth and fulfillment, is combining with the others trends listed here to drive demand for

¹³³ World Travel Market, “Global Trends Report,” 2008, p. 12.

¹³⁴ UNWTO, *Handbook on Tourism Product Development*, p. 12.

¹³⁵ *Market for Responsible Tourism Products*, p. 26.

¹³⁶ *Ibid.*, p. 25.

responsible tourism products. As Baby Boomers, Gen-Xers, and Millennials or Gen-Yers seek authentic, 'green' experiences as an escape from the stress of urban life, they are also increasingly searching for deeper meaning in their vacation experiences. This has led to a tremendous growth in both "volunteer" tourism ("voluntourism")¹³⁷ and travelers' philanthropy¹³⁸ programs, where travelers donate time, money, or goods to support worthy projects in the host destination. Opportunities for personal growth and fulfillment are a value-added component of leisure holidays, and responsible tourism is growing as providers recognize this growing demand.

Tourism at Turneffe is drawn largely from this pool of conscientious consumers and it seems clear that government policies and future developments should seek to strengthen and carefully grow this market. Indeed, there is danger in losing this market if Turneffe does not meet international standards for sustainability. According to a recent UNWTO study, consumers are increasingly taking into account a destination's reputation for social and environment responsibility when they make their travel choices. "The buildup of consumers' socio-environmental awareness of tourism development," states the UNWTO, "is leading to increased scrutiny on the part of the public in destination decision making and a growing requirement for new tourism developments to be sustainable."¹³⁹

Clearly the establishment of the new Turneffe Atoll Marine Reserve is a critical step in the right direction in terms of ensuring the sustainable development and longevity of both commercial fishing and marine-based tourism. It is evident, as well, from the above description of consumer trends, that the Marine Reserve will be attractive to the types of environmentally and socially conscious tourists that are most appropriate for Turneffe. The Reserve can should be viewed – and marketed – as an attraction that can help to draw these types of responsible travelers to the Atoll.

- **Ensuring Sustainable Tourism at Turneffe Atoll**

Although the Marine Reserve enjoys widespread support, it is vital that those whose livelihoods depend on Turneffe continue to be involved in its management, that financial resources and public policies ensure the reserve is adequately protected and patrolled,

¹³⁷ "VolunTourism - Top Sources for Finding Volunteer Travel d Vacations," About.com Adventure Travel, website: <http://adventuretravel.about.com/od/volunteertravel/a/TopVolSources.htm>.

¹³⁸ CREST has a multi-dimensional Travelers' Philanthropy program that promotes companies and travelers giving back to projects in tourism destinations. See www.travelersphilanthropy.org.

¹³⁹ UNWTO, *Handbook on Tourism Product Development*, p. 11.

and that scientific monitoring be done to track the impacts on the reserve's ecosystem. The Marine Reserve, by itself, will not "save" Turneffe. It needs to be accompanied by enforcement of stronger policies and standards for sustainable construction and operations of resorts, research facilities, private homes, and other developments to conform to both existing regulations in Belize and the growing knowledge of international "best practices." Only through protecting both the Atoll's marine and terrestrial ecosystems will Turneffe continue to grow as an attractive destination for high value tourism.

The "Sir Hakimi's Belize Dive Haven" is inappropriate for Turneffe: its construction is unnecessarily damaging the terrestrial and marine environment and it is likely to cater to a less environmentally and socially conscientious travelers. This is a step in the wrong direction. This type of development can very quickly damage swaths of land in the Atoll and undermine Turneffe's currently strong international reputation for high quality tourism based on sustainable marine activities. As stated above, today's high-value travelers are interested in vacations where they both learn and contribute to the well-being of the destination.

Turneffe Flats Resort, winner of the Belize Tourism Board's Conservation Award, has been actively engaged in conservation and community issues.¹⁴⁰ Turneffe Flats is a charter member of One Percent for The Planet and donates 1% of all its income to conservation projects – and these funds have been used to create the Turneffe Atoll Trust, a US-registered nonprofit organization¹⁴¹. Turneffe Atoll Trust has led efforts to establish the Turneffe Atoll Marine Reserve and also led the way in establishing Belize's landmark Catch and Release legislation. Other resorts at Turneffe may have also undertaken conservation efforts which we are not aware of.

Turneffe's tourism operators could strengthen their position in helping the Marine Reserve and in ensuring sustainable tourism development by establishing more thorough guidelines and a certification program. Belize does have guidelines for coastal tourism development. These include, for instance, the *Tourism and Recreation Best Practices Guidelines for Coastal Areas in Belize* produced by the Coastal Zone Management Authority and Institute (CZMAI), the *Turneffe Atoll Coastal Zone Management Guidelines 2011* produced by the Turneffe Atoll Coastal Advisory Committee and CZMAI, and the guidelines in the *Turneffe Atoll Management Plan 2012-2017*. Belize does not yet have a national tourism certification program, although

¹⁴⁰ Turneffe Flats is winner, as well as Trip Advisor's 2011 "Certificate of Excellence" and a Butterfly Club Eco Rating of 4.6 out of 5 from Eco-Tropical Resorts. Turneffe Atoll Trust, website: <http://www.turneffeatoll.org/>; Butterfly Club Eco-Rating, Eco-Tropical Resorts.com, <http://www.eco-tropicalresorts.com/TheButterflyClub/EcoRatingTurneffeFlats.html>.

¹⁴¹ Turneffe Atoll Trust, website: <http://www.turneffeatoll.org/>.

several years ago, the Inter-American Development Bank provided start up funds to help Belize create a tourism certification program. Several countries in the region have developed national certification programs, including Costa Rica whose rigorous Certification for Sustainable Tourism (CST) has gained world-wide recognition.¹⁴² Given the fragility of Turneffe’s ecosystem, it seems wise that its resorts and tour operators work to become certified under one of the reputable international programs.¹⁴³ In addition, we recommend that the government of Belize create or adopt a national certification program, based on the set of international performance indicators promoted by the Global Sustainable Tourism Council (GSTC).

The GSTC, launched in 2007, is a project of the United Nations Foundation and is supported by a growing list of governments, tourism associations and businesses, UN and other international agencies, and environmental NGOs. It promotes a set of core environmental, socio-cultural, and economic performance indicators that have been distilled from existing sustainable tourism certification programs. Known as the “Global Sustainable Tourism Criteria” these three dozen core indicators represent, according to its website, “an effort to come to a common understanding of sustainable tourism, and are the minimum that any tourism business should aspire to reach.” The website further explains, “The criteria are part of the response of the tourism community to the global challenges of the United Nations’ Millennium Development Goals. Poverty alleviation and environmental sustainability – including climate change – are the main cross-cutting issues that are addressed through the criteria.”¹⁴⁴

While Turneffe’s individual resorts and tour operators could seek certification and compliance with the GSTC’s Criteria for Hotels and Tour Operators, the entire Atoll might consider seeking a destination-wide certification. The GSTC has recently proposed a set of draft criteria for destinations. “To satisfy the definition of sustainable tourism,” the GSTC website explains, “destinations must take an interdisciplinary, holistic and integrative approach which includes four main objectives: to (i) demonstrate sustainable destination management; (ii) maximize social and economic benefits for the host community and minimize negative impacts; (iii) maximize benefits to communities, visitors and cultural heritage and minimize impacts; and (iv) maximize benefits to the

¹⁴² Center on Ecotourism and Sustainable Development (CESD, now CREST), *Financing Tourism Certification Programs*, Handbook 4, funded by the InterAmerican Development Bank, 2006, pp. 12, 17; Certification for Sustainable Tourism, <http://www.turismo-sostenible.co.cr/en>.

¹⁴³ “Programs Supporting Eco-friendly Standards,” Marine Conservation Agreements: A Practical Toolkit, http://www.mcatoolkit.org/Overview/Basics_Ecoresorts_Standards.html.

¹⁴⁴ “Global Sustainable Tourism Criteria for Hotels and Tour Operators,” Travel Forever: Global Sustainable Tourism Council, website: <http://www.gstcouncil.org/resource-center/sustainable-tourism-gstc-criteria/criteria-for-hotels-and-tour-operators.html>.

environment and minimize negative impacts.”¹⁴⁵ Certification of Turneffe as a sustainable tourism destination is a logical complement to the government’s declaration of the new Turneffe Atoll Marine Reserve. Collectively, these provide a strong framework for future protection of the Atoll’s entire land and water ecosystem.

Equally important is determining how much Turneffe’s tourism sector can be expanded and still ensure that it is sustainable. Of the 190 surveyed and privately owned plots of land on Turneffe, some 15 or 16 are suitable for tourism construction, according to experts interviewed at the Atoll. This is, in reality, a fairly large number. Several of those interviewed said that the Atoll can accommodate only two or three more dive and fishing resorts, and all must be small and carefully built to protect the marine and terrestrial environments. As one fisherman put it, “Ecotourism will work. But we don’t want a large expansion of tourism lodges, condos and multimillionaires. We’re hearing this is a possibility. The dangers for fishermen,” he added, “are cutting or destroying sea grasses, the reef, mangroves and dredging. Inappropriate kind of tourism is the main problem.”¹⁴⁶ While it is beyond the scope of this report to determine precisely how many new resorts could be built and where they should be located, two things are clear: only a handful of new resorts should be built and they all must conform to high internationally recognized sustainability standards for design, construction, and operations.¹⁴⁷ The total number of operating resorts should probably not exceed a half dozen.

These all-inclusive resorts could be complemented with a small number of more basic overnight guesthouses built at fishing camps. According to the 2011 *Management Guidelines*, “Some traditional fishermen have expressed a desire to develop their fishing camps into small, guest houses offering the eco-cultural experience of the fishermen.” The *Guidelines* recommend, “Zoning schemes should give fishing camps the option to develop ‘guest houses’ promoting opportunities for traditional users to benefit from tourism.”¹⁴⁸

In addition, Turneffe’s scientific research stations can play an active role in supporting the new reserve and sustainable tourism. At present, Turneffe Atoll’s two research stations, both established in the 1990s, have possibilities to expand their number of

¹⁴⁵ “Global Sustainable Tourism Criteria for Destinations,” Travel Forever: Global Sustainable Tourism Council, website: <http://www.gstcouncil.org/resource-center/sustainable-tourism-gstc-criteria/criteria-for-destinations.html>.

¹⁴⁶ Authors interview, April 2012.

¹⁴⁷ IUCN, *Siting and Design of Hotels and Resorts: Principles and Case Studies for Biodiversity Conservation*, IUCN, Gland, Switzerland; Caitlyn Toropova et. al., editors, *Global Ocean Protection: Present Status and Future Possibilities*, November 23, 2010, IUCN: Gland, Switzerland.

¹⁴⁸ *Management Guidelines 2011*, p.6.

volunteer researchers¹⁴⁹ and to participate in monitoring and data collection within the new Marine Reserve. The Blackbird Oceanic Field Station is run by the Oceanic Society, a nonprofit conservation organization based in California, and is located next to the dive resort at Blackbird Caye. This well-maintained field station, set on a peninsula with a wide expanse of white sand beach and adjacent to coral reefs, runs a number of expeditions and projects, with much of the research supported both financially and physically by volunteers. At present, the station host about 200 students per year, some from Belize but mainly from the U.S. They come for short stays ranging from a few days to three weeks. Some graduate students and professors spend longer periods at the station and it has a staff of between six and nine.¹⁵⁰

Volunteers and staff participate in ongoing basic research projects -- including coral reef monitoring and data collection on bottlenose dolphins, manatees, and crocodiles – and this data has been utilized, for instance, in the *Turneffe Atoll Marine Reserve Management Plan*.¹⁵¹ The field station program combines some tourism activities with its scientific research. Station staff say that they want to expand by about 50% the number of volunteers and to develop new activities to include kayaking and nature trails.¹⁵²

The largest and oldest research facility is the Calabash Caye Field Station, Belize's first nationally owned marine research station which is located in the south-eastern portion of Turneffe next to the Coast Guard station. Since 2009 it has been managed by the University of Belize's Environmental Research Institute (ERI). ERI maintains ten permanent monitoring sites at Turneffe focused on data collection for managing the Atoll's coral reefs, mangroves, and sea grasses, as well as other sites examining coral bleaching.¹⁵³

While primarily catering to Belizean students, it is striving to become self supporting by attracting international students and researchers. Efforts are underway to upgrade the station's facilities. Impressively, the station has recently installed equipment so that all of its energy is being generated by wind and solar power – offering a good model for resorts and other buildings at Turneffe.¹⁵⁴

¹⁴⁹ Authors interviews, April 2012.

¹⁵⁰ Ibid; Oceanic Society, website: <http://www.oceanicsociety.org/accommodations/belize-families-blackbird-caye-field-station>.

¹⁵¹ Wildtracks, *Management Plan*, p. 119.

¹⁵² Author's site visit and interviews, April 2012.

¹⁵³ "Calabash Caye Field Station, Environmental Research Institute, University of Belize, website: <http://eriub.org/calabash-caye-field-station/calabash-caye-field-station.html>.

¹⁵⁴ Author's site visit and interviews, April 2012.

Those interviewed say both research stations support the new marine protected area and that they envision undertaking research focused on critical issues around the reserve. In addition, they can both accommodate more students and researchers and offer volunteer activities (voluntourism) as well to interested guests at the Atoll's three resorts and possibly to some visitors on day tours. In turn, the resorts might help to fund marine biologists who would both carry out research projects and also serve as guides and instructors for interested tourists. These activities not only can contribute more resources to monitoring and protecting the reserve, but also might well help raise tourist donations to support conservation projects at the Atoll.

5. Conclusion

This report examines key issues surrounding the nexus of tourism, commercial fishing, and Marine Protected Areas, drawing particularly on lessons learned from elsewhere in Belize and other parts of the world, as well as on the current realities of Turneffe Atoll. With the Atoll facing threats from both a steep decline in commercial fishing productivity and the lack of effective management, the establishment of the Turneffe Atoll Marine Reserve in late 2012 is critically important. But additional steps are needed to more fully protect the marine and terrestrial ecosystems.

In reviewing the four questions posed in the Introduction, the following conclusions can be drawn:

- **What types of MPAs have been most successful in increasing fish stocks and improving commercial fishing?**

Throughout the world, MPAs have been widely adopted as a way to increase fish stocks and biodiversity. But many of the more than 150,000 MPAs around the world, including some of those in Belize, have underperformed. Reasons are varied and complex but one factor seems of upmost importance: that the local stakeholders, most importantly those involved in commercial fishing and nature-based tourism, actively support and tangibly benefit from the MPA. The Turneffe Atoll Marine Reserve, unlike many others, has been carefully planned through a wide range of consultations and thorough collaborative with all the stakeholder groups. This bodes well for its long term success.

Going forward, the body responsible for administering the MPA must possess the skills, talents, and general capacity to operate the MPA. It is also vital that the body include representatives from groups with direct interests in its success, most importantly local commercial fishermen and ecotourism businesses.

- **What types of tourism development are compatible with a healthy commercial fishery?**

Turneffe Atoll's non-extractive, small scale ecotourism has demonstrated that it is compatible with commercial fishing. This type of tourism, which includes sport fishing, diving, and snorkeling, depends, like commercial fishing, upon a healthy marine environment. Not only are they not competitors, they are natural allies who can and should collaborate to promote and protect the new Marine Reserve and to prevent destructive tourism developments.

Turneffe's world-renowned catch-and-release sport fishing is causing negligible mortality and has led to an increase in stocks of bone, tarpon, and permit. These species are not of commercial value and, in the main sport fishing takes places in different locations from commercial fishing. This has enabled sport and commercial fishing to coexist rather than compete with each another. In addition, with the decline of commercial fish stocks, tourism has provided alternative employment for dozens of commercial fishermen. Further, some fishermen have expressed interest in using their fishing camps at Turneffe as small guesthouses for tourists interested in learning about the local culture as well as fishing.

- **What are the economic, social, and environmental pros and cons of different types of tourism development?**

Research and studies carried out in Belize and other parts of the world document that overnight tourism brings far more economic benefit to a destination than either day trips by cruise passengers or by visitors from elsewhere in the country. As elaborated above, Scuba diving organized by resorts in Turneffe Atoll generates 29 times more than dive excursions to Turneffe sold by cruise ships. Other CREST studies found that, for instance, in Costa Rica, Honduras, and Belize, a stay over tourist puts between 14 and 23 times more into the local economy than a cruise passenger.¹⁵⁵ Furthermore, CREST research in Costa Rica have documented that small-scale, higher-end nature-based tourism generates more for the local economy and creates more permanent, good paying jobs for local residents than do either cruise tourism or large-scale, international resorts. In Costa Rica's Osa Peninsula, for instance, local residents working at ecolodges make on average two times more than those working in other local jobs. In addition, nature-based tourism businesses, because they are dependent on the local environment, tend to be more conscious of protecting their resource base.

¹⁵⁵ Martha Honey and David Krantz, *Global Trends in Coastal Tourism*. Center on Ecotourism and Sustainable Development, Washington, DC, 2007, p. 12.

- **What types of tourism development are most viable at Turneffe given both the Atoll's current social, economic, and environmental realities and global tourism trends?**

This report challenges the commonly held assumption that high volume tourism -- larger resort projects, cruise tourism, and greater numbers of tourists generally -- automatically translate into more jobs and more revenue for the destination. As stated above, this is not true. Small-scale stay over tourism is most valuable. Turneffe needs to protect and gradually grow its market for *high value* tourism which emphasizes environmental stewardship, good jobs, and sustainable utilization of local resources based on relatively modest numbers of visitors.

Further, Turneffe cannot support a large increase in the number of tourism resorts built on the Atoll. The emphasis should be on controlled and sustainable growth and on strengthening existing facilities to improve their environmental and social practices. Adoption of an internationally recognized certification program for the accommodations (as well as for other tourism facilities including boats and beaches) is important in ensuring long term protection of the Atoll. In terms of the day visitors, the emphasis should be on increasing the numbers of overnight visitors from Belize City and other parts of the country rather than cruise tourism which provide the least economic benefit to Turneffe.

Fortunately, the type of tourism that is most suitable for and beneficial to Turneffe Atoll constitutes a significant and growing sector of the traveling public. Broadly stated, these travelers are described as "experiential" or "conscientious" travelers who seek vacations that are both enjoyable and educational, who want to connect with nature and have authentic experiences, and who are concerned about the impacts of their travels on the environment and host communities. The new marine protected area both enhances Turneffe Atoll's appeal to these discriminating international travelers and helps ensure the longevity and sustainability of the destination, and its two main economic sectors, small- scale, marine-based tourism and well managed commercial fishing.

About the Center for Responsible Travel (CREST)

The Center for Responsible Travel (CREST) is a unique non-profit organization affiliated with Stanford University, devoted to increasing the positive global impact of responsible tourism. CREST stands alone in its field, having built an international network of highly-trained experts providing research and interdisciplinary analysis and solutions, as well as publications, conferences, courses, training, and educational workshops.

Since its founding in 2003, CREST has become recognized as the independent conscience of travel - the world's largest economic sector – establishing the gold standard in best practices and principles in ways that protect communities and conservation. CREST's core programs and projects have focused on analyzing coastal tourism, residential and retirement developments, ecotourism, cruise tourism impacts on ports-of-call, indigenous rights and tourism, 'green' certification programs for tourism businesses, travelers' philanthropy, sustainable destination management, tourism trends and consumer demand, tools for financing sustainable tourism projects, and cost benefit analyses of different types of tourism. CREST identifies and promotes innovative and replicable models of sustainable tourism. It utilizes a network of experts and collaborates with institutes and other organizations around the world. Through its Consulting Services, CREST brings together tourism professionals from around the world to assist with field research and project implementation in destination countries.

CREST's mission is to promote responsible tourism policies and practices globally so that local communities may thrive and steward their cultural resources and biodiversity. By addressing the environmental and cultural devastation that can result from irresponsible travel policies, CREST has created an international footprint in preserving and enhancing some of the most beautiful and culturally rich parts of our planet. Managed access to places of natural and architectural beauty cultivate learning and exploration, and in the process allows people to experience some of the planet's most unique and important environments.

CREST has demonstrated that when tourism development is responsibly managed and incorporates sustainable best practices, it has the power to bring employment and conservation to areas that otherwise fall prey to clear-cut logging, mining, industrial agriculture, and illegal trade and traffic. Through its offices in Washington D.C. and at Stanford University CREST works to “transform the way the world travels.”

CREST has two websites: www.responsibletravel.org & www.travelersphilanthropy.org

List of References*

- Aburto-Oropeza, Octavio, et al. 2011. "Large Recovery of Fish Biomass in a No-Take Marine Reserve." *PLoS ONE*. Vol. 6, issue 8, August. 7p.
- Anderson, Alex and Craig Hayes. 2011. "Analysis of Fish Morality Related to Catch and Release Sport Fishing in Belize." Unpublished paper obtained from Craig Hayes.
- Belize Tourism Board (BTB). 2008. *Travel & Tourism Statistics*. BTB: Belize City. 60 pp.
- Belize Tourism Board and Conservation International. 2008. *Protecting Belize's Natural Heritage: An Action Plan for Shared Stewardship of a Cruise Destination*. Belize City, Belize and Arlington, VA. 30pp.
- Cayetano, Marion. 2002. "Revenue Generation for Marine Protected Areas in Belize." Program for Belize and The International Ecotourism Society. 30pp.
- Center for Responsible Travel (CREST). 2012. *Alternative Development Models and Good Practices for Sustainable Coastal Tourism: A Framework for Decision Makers in Mexico*. CREST, Washington, DC. 102pp.
- Center for Responsible Travel, *The Case for Responsible Travel: Trends and Statistics*, Washington, DC, January 16, 2013, 8 pp.
- Center for Responsible Travel. 2009. *The Market for Responsible Tourism Products, with a special focus on Latin America and Nepal*. Produced for SNV (Netherlands Development Organization). 174pp.
- Center on Ecotourism and Sustainable Development (CESD, now CREST). 2006. *Cruise Tourism in Belize: Perceptions of Economic, Social & Environment Impact*." Washington, DC and Stanford University. 142pp.
- Center on Ecotourism and Sustainable Development (CESD, now CREST), 2006. *Financing Tourism Certification Programs*. Handbook 4. Funded by the InterAmerican Development Bank, 32 pp.
- Center on Ecotourism and Sustainable Development (CESD, now CREST). 2007. *Cruise Tourism Impacts in Costa Rica & Honduras: Policy Recommendations for Decision Markers*. Washington, DC and Stanford University. 78pp.
- Christie, P. and T. White. 2007. "Best Practices for Improved Governance of Coral Reef Marine Protected Areas." *Coral Reefs*. 26. 1047-1056.

Cooper, Emily, Laretta Burke, and Nadia Bood. 2009. "Coastal Capital: Belize. The Economic Contributions of Belize's Coral Reefs and Mangroves," Working Paper. World Resources Institute. 53pp.

Coastal Zone Management Advisory Institute (CZMAI), *Tourism and Recreation Best Practices Guidelines for Coastal Areas in Belize*, no date.

Destination Wetlands: Supporting Sustainable Tourism. 2012. Secretariat of the Ramsar Convention on Wetlands, Gland, Switzerland, & World Tourism Organization (UNWTO), Madrid, Spain. 78 pp.

Driscoll, Laura and Carter Hunt, Martha Honey and William Durham. 2011. *The Importance of Ecotourism as a Development and Conservation Tool in the Osa Peninsula, Costa Rica*. CREST, Washington, DC and Stanford University. 68pp.

Fedler, Anthony J. 2011. *The Economic Value of Turneffe Atoll: Full Report*. Human Dimensions Consulting, Gainesville, FL. 23 pp.

Fedler, Anthony and Craig Hayes. 2008. "Economic Impact of Recreational Fishing for Bonefish, Permit and Tarpon in Belize for 2007." Human Dimensions Consulting, Gainesville, FL and Turneffe Atoll, Belize. 26pp.

Hayes, Craig. "Status of the Turneffe Atoll Fishery, including Fishermen's Perceptions." Draft provided by author. Turneffe Atoll Trust, August 2012.

Honey, Martha. 2008. *Ecotourism and Sustainable Development: Who Owns Paradise?* Island Press, Washington, DC.

Honey, Martha and David Krantz. 2007. *Global Trends in Coastal Tourism*. Center on Ecotourism and Sustainable Development, Washington, DC. Prepared for Marine Program, World Wildlife Fund. 140pp.

Honey, Martha and Erick Vargas and William H. Durham. 2010. *Impact of Tourism Related Development on the Pacific Coast of Costa Rica: Summary Report*. CREST, Washington, DC. 108pp.

Honey, Martha, editor. 2011. *Travelers' Philanthropy Handbook*. CREST: Washington, DC and Stanford University. 227pp. + appendices.

IUCN. 2012. *Siting and Design of Hotels and Resorts: Principles and Case Studies for Biodiversity Conservation*. IUCN, Gland, Switzerland. 56pp.

Klooster, Erik van and Jeroen van Wijk, Frank Go, and Johan van Rekom. Erasmus University Rotterdam, The Netherlands. 2008. "Educational Travel: The Overseas Internship." *Annals of Tourism Research*, Vol. 35, no. 3, pp. 690–711.

Lange, Glenn-Marie and Narriman Jiddawi. 2009. "Economic value of marine ecosystem services in Zanzibar: Implications for marine conservation and sustainable development." *Ocean & Coastal Management*. 52. 521-532.

Macintyre, Ian G., Marguerite A. Toscano, Ilka C. Feller, and Maria A. Faust. 2009. "Decimating Mangrove Forests for Commercial Development in the Pelican Cays, Belize: Long-Term Ecological Loss for Short-Term Gain?" *Smithsonian Contributions to the Marine Sciences*, Smithsonian Institution. no. 38. pp. 281-290.

McField, Melanie D. 1999. "Coral Response During and After Mass Bleaching in Belize." *Bulletin of Marine Science*. Vol. 64, no. 1. pp. 155–172.

Moreno, Peter S. 2005. "Ecotourism Along the Meso-American Caribbean Reef: The Impacts of Foreign Investment." *Human Ecology*. Vol. 33, no. 2. 217-244.

Naber, Helena, and Glenn-Marie Lange and Marea Hatzios. 2008. *Valuations of Marine Ecosystem Services: A Gap Analysis*." UNEP/WCMC. 57pp.

Noble, Rachel, Paul Smith and Polly Patullo, editors. 2012. *Water Equity in Tourism: A Human Right – A Global Responsibility*. Research Report. Tourism Concern: London, UK. 31pp.

Pomeroy, Robert and Tara Goetze. 2003. *Belize Case Study: Marine Protected Areas Co-Managed by Friends of Nature*. Caribbean Conservation Association. 64 pp.

Pons , L. J. and J.L. Fiselier. 1991. "Sustainable Development of Mangroves." *Landscape and Urban Planning*. Vol. 20, no. 1-3.103-109.

Randolph, John. 2011."Threatened Turneffe Atoll." *Fly Fisherman Magazine*. May 31, 2011.

Reiss, P., M. Reiss and J. Reiss. 2003. "Catch and Release Fishing Effectiveness and Mortality," Acute Angling Inc., Department of Material Science, University of Maryland and Lab. Supvr. Dept. Of Neurobiology, Rutgers, University. Available at: <http://www.acuteangling.com/Reference/C&RMortality.html>.

Smith, Nick. 2008. "Righting Wrongs on the Reef." *Geographical Magazine*. UK. April issue.

Svensson, Patrik. 2009. "Privately Managed Marine Reserves as a Mechanism for the Conservation of Coral Reef Ecosystems: A Case Study from Vietnam." *AMBIO: A*

Journal of the Human Environment. Royal Swedish Academy of Sciences. Vol. 38, no. 2., 72-78.

Toropova, Caitlyn and Imèn Meliane, Dan Laffoley, Elizabeth Matthews and Mark Spalding, editors. 2010. *Global Ocean Protection: Present Status and Future Possibilities*, November 23, IUCN: Gland, Switzerland. 89 pp.

Turneffe Atoll Coastal Advisory Committee. 2011. *Turneffe Atoll Coastal Zone Management Guidelines 2011*. Coastal Zone Management Authority and Institute: Belize City. 17 pp + Annexes.

“Turneffe Atoll Land Tenure,” August 2011. Unpublished paper.

Turneffe Island Coastal Advisory Committee, 2003. *Turneffe Island Development Guidelines, 2003*, Coastal Zone Management Authority and Institute: Belize City, 11 pp + Annexes.

United Nations Environmental Programme, Rainforest Alliance and Conservation International, *Guide to Good Practices for Sustainable Tourism in Marine-Coastal Ecosystems (Lodging Businesses)*, 2009, available online at http://www.rainforest-alliance.org/tourism/documents/marine_coasta_eng.pdf.

United Nations Environment Programme (UNEP).2009. *Sustainable Coastal Tourism: An Integrated Planning Process and Management Approach*. UNEP Manuals on Sustainable Tourism. UNEP: Paris, France.

UNWTO, 2011. *Communicating Heritage: A Handbook for the Tourism Sector*, Madrid, Spain. 149 pp.

United Nations World Tourism Organization (UNWTO). 2001. “Global Forecasts and Profiles of Market Segments.” *Tourism 2020 Vision*. Vol. 7, Madrid, Spain.139pp.

Varkey, Divya and Cameron H. Ainsworth and Tony J. Pitcher. 2012. “Modelling Reef Fish Population Responses to Fisheries Restrictions in Marine Protected Areas in the Coral Triangle.” *Journal of Marine Biology*. Vol. 2012.18pp.

Wildtracks, 2011. “Turneffe Atoll Marine Reserve: Management Plan, 2012-2017.” draft. Funded by Turneffe Atoll Trust. Belize Fisheries Department: Belize City, 290pp.

World Travel and Tourism Council (WTTC). 2010. *Travel & Tourism Economic Impact*. London, UK.

World Travel and Tourism Council (WTTC). 2012. *Travel & Tourism Economic Impact 2012: Belize*. WTTC: London, UK. 20pp.

Young, Emily H. 1999. "Balancing Conservation with Development in Small-Scale Fisheries: Is Ecotourism an Empty Promise?" *Human Ecology*. Vol. 27, no. 4. December. 581-620.

* Most newspaper articles and website references are not listed.