

## **RESOURCE VALUE ASSESSMENT OF THE PORT HONDURAS MARINE RESERVE, TOLEDO DISTRICT, BELIZE**

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### **INTRODUCTION**

Experience has shown that the success of protected areas in achieving their goal of maintaining biodiversity, will depend on the participation and support of local people (Wells & Brandon, 1992). As a result, protected areas are now considered to be key components in the provision of sustainable benefits for people living nearby and no longer as areas where human consumptive practices should be excluded (IUCN-WCPA, 2000).

By conducting an economic value assessment of a protected area, researchers can identify goods and services or 'products' that can generate income for the area or communities. An economic value assessment also helps to identify values that people place on an area, which values are being captured and which are not and, as well, which groups might derive more benefits.

While studies have been conducted world wide in order to value the resources of protected areas through consultations with communities and through market research, little has been done in Belize to derive the value of specific protected areas. An economic value assessment of the Belize Barrier Reef (BBR) extending from Belize City to Placencia conducted by Dharmaratne (2002), demonstrated that diving as a tourism activity could generate BZ\$6 million per year based solely on fees and the area's reef fisheries could generate approximately BZ\$4 million per year.

### **BACKGROUND**

The Port Honduras Marine Reserve co-managed by the Toledo Institute of Development and Environment (TIDE) and the Belize Fisheries Department, is a part of the Meso-American Biological Corridor which covers only 0.5% of the world's land surface yet houses 7% of its biological diversity (Miller *et al.*, 2001)

In addition to the reserve's importance for sustaining biodiversity, it is also an important income generating source for the three communities buffering the reserve: Punta Gorda Town (PG), Monkey River Village (MR) and Punta Negra Village (PN). The residents of the villages of Monkey River and Punta Negra (approximate population of 300) are mostly fisher folk, surviving off the income from lobster, conch and fish. Residents from the three communities also use the area for fly fishing and other tourism activities.

In light of the above, TIDE felt it was important to support the biological component of the baseline study with a resource value assessment in order to derive a clearer understanding of how important PHMR's resources are to local residents and stakeholders. The results of the valuation study could then be used to guide policy makers and managers in the development of more appropriate policies and plans for the reserve.

The overall objective of the study was to derive an estimate of the reserve's economic values. The scope of the study was limited to direct uses of the reserve and the most beneficial industries and activities for communities: fishing (both income generating and subsistence), tourism and recreational use.

## **METHODOLOGY**

Interview based questionnaires were used to gather the data. The data were gathered primarily from three different types of questionnaires designed to gather information from three target groups: fishers, tour guides and the general population.

The fishers' questionnaire built on information gathered from Heyman and Graham (2000) and was aimed primarily at determining a fisher's average catch per month for target species and average selling price for that type of species, time spent fishing and other income generating activities apart from fishing. Data gathered from tour guides included types of tours offered, pricing and frequency of tours. The tour guides interviewed were asked to exclude any business conducted via El Pescador fly fishing lodge in Punta Gorda Town. That information was gathered from the manager of the lodge, as it was assumed that the manager would be able to provide accurate records of its expenditures. The third questionnaire focused on the non-income generating uses of the reserve, such as recreational uses and subsistence fishing, and targeted the general population.

Each type of survey was tested on a member of the target group. Two community members from each of the three communities in which the survey would be carried out, Punta Gorda Town, Monkey River Village and Punta Gorda Town, were trained in interviewing techniques and basic data collection protocols. The surveys were then tested again on these community research assistants and further adjustments made, particularly in terms of language and terminology. The surveys were conducted by the community research assistants during the months of November and December 2003.

## **RESULTS**

The data gathered from this investigation represents an attempt to determine the goods and services available in the PHMR relating to fishing, tourism and recreational use and to determine the value of these goods and services.

### *PHMR Fishery Value*

Based on the data derived from 50 fishers, it was estimated that the total annual value of the fishery for PHMR is BZ\$889,906.00 with lobster accounting for 57% of the total value with a value of BZ\$506,638.00. Heyman and Hyatt (1996) in their survey of 28 captains representing 67 commercial fishermen who fished within the PHMR estimated

an annual value of the fisheries at BZ\$1,516,963.00. Similar to this survey, Heyman and Hyatt (1996) also reported that lobster accounted for about 60% of the income generated at BZ\$904,000 per year indicating that lobster remains an important revenue generator for fishers (Table 10).

The results of this study compared to Heyman and Hyatt (1996) showed significant increases from 1996 to 2003 in the total landings for species such as yellow tail snapper, conch, mutton snapper, mackerel, crevalle jack and lane snapper (Table 10).

Heyman & Graham (2000) estimated fishery values at about \$2,002,222 and total landings of 575,000 lbs per year, however this value extends beyond the boundaries of the PHMR and includes Placencia and Gladden Spit to the Sapodilla Cayes and the Sarstoon River. The lobster landings as reported by Heyman and Graham (2000) accounted for half the total value generating BZ\$920,000.

The estimated total value of the fisheries of PHMR based on the results of this study is an underestimate since it has been estimated that half of the fishers working in the PHMR are from Guatemala and Honduras (Heyman and Hyatt, 1996) and this subpopulation was not interviewed.

#### *PHMR Tour Guide Industry Value*

Based on the data gathered from 17 tour guides it is estimated that tour guides generate BZ\$1,116,000.00 per year and an estimated annual profit of Bz\$514,719.00. After including revenues generated by El Pescador PG for trips to PHMR, the total revenue generated by tour guides BZ\$1,391,000.00.

Aside from the economic value, the importance of the PHMR to the fly fishing industry was also emphasized by 8 of the 12 tour guides who felt that fly fishing was not comparable to anywhere else. The manager of El Pescador PG also recognizes the importance of the reserve and states “NO WAY NO HOW would they continue to offer fly fishing” if the PHMR became unavailable.

Although some of the guides stated that the Sapodilla Cayes Marine Reserve would provide an alternative arena for tours if they could no longer do trips in the PHMR, seven of the nine guides felt that this change in location would result in an increase in price which would lower the number of tourists they take out each year. This further emphasizes the importance of the reserve to tourism and highlights that potential destruction of the area results in expense to biodiversity and local incomes.

Although preliminary, this study also showed that hoteliers benefit from visitors to the PHMR. It was estimated that hoteliers generate revenues ranging from BZ\$50.00 to BZ\$1600.00 per trip based on the average number of nights guests stay and the average cost per night. It is recommended that a more extensive study be conducted to determine the value of the PHMR to both the hotel and restaurant industries. However, it is clear that the value of the reserve to tourism is high.

*Comparison of fishery and tourism derived revenues*

Although no monetary values were provided by Heyman and Graham (2000) they suggested that fly fishing for permit, snook, bonefish and tarpon could be more lucrative to a person than fishing for the local market. Furthermore, the catch and release nature of the activity made it more sustainable than commercial fishing. Heyman and Hyatt (1996) reported that a full-time sport fishing guide who does an average of 100 trips per year could earn an average of BZ\$36,000 per year, as compared to a local commercial fisherman who conducts 150 trips per year and earns an average income of BZ\$21,000. This study also showed that a fisherman could make approximately \$18,000 per year while a fly fishing guide who does 100 trips per year could generate revenues of \$40,000 per year. However, although the fishing industry is lucrative to tour guides the market could become saturated whereby a substantial increase in the number of tour guides may result in a decrease in profit per guide. Furthermore, the carrying capacity of reserve in terms of its abundance of prized sport fishing species such as permit may be unable to accommodate a large number of guides.

*PHMR Recreationist's Value*

Although, recreationists do not derive any revenue from doing activities in the reserve, this study showed that recreationists were willing to spend an estimated BZ\$547,000 per year to be able to enjoy the reserve through activities such as swimming, snorkeling and sport fishing, adding further value to the reserve. The study also showed that a wide-cross section of the population had visited the reserve and approximately 40% visit at least once a month.

**CONCLUSIONS AND RECOMMENDATIONS**

The results of the survey indicate that the PHMR generates annual revenues of approximately BZ\$2.83 million based on the fishery, tour guiding and recreation values. It is recommended that a more comprehensive study be done to incorporate non-Belizean fishers, tour guides and recreationists and capture the seasonality of the activities. In addition, the benefits to hotel and restaurant owners should be assessed. Since this study failed to calculate the net economic value i.e. revenue obtained from selling minus harvesting, processing, transportation costs and non-financial costs such as labour, it is also recommended that these costs be estimated in future related studies.

Based on discussions held with the community research assistants after the surveys had been completed, the following are issues that had been raised by the interviewees. The concept of depletion of resources is not readily understood and accepted by all. For example, hypothetical questions such as “if PHMR no longer had fish in it, would one continue to fish for a living” were not well received. One respondent answered that “There will always be fish in PHMR. My father and grandfather have fished here for over a hundred years. God will provide”. This highlights the need for continued community educational programmes regarding marine resources, conservation and management practices.

An analysis of each researcher's experience also provides us with more in depth discussion of community member's values of the reserve as well as their satisfaction with

management. Many respondents to the Fishers Survey discussed their dissatisfaction with the income generating possibilities in the reserve. On the question which asked what type of equipment the fishers used, some fishers wanted TIDE to know that they used gill nets, which are illegal in the reserve. As surveys were done just before Christmas, this was an important time for fishing and respondents replied that it was hard without nets to get so much fish in order to generate money for Christmas time. The gill net exchange program, which TIDE used to trade cash for nets, was insufficient for some of these fishers as money is a one time thing. To one of the fisher women her net was “priceless. You can’t pay me for my net.” This highlights the value that fishers place on the reserve seas.

Finally, it is apparent that much more needs to be done in the way of alternative income generating activities not only for men, but also for women. One fisherwoman states that “TIDE has to do something (for income generation), there are so many single men that want to help their women but they can’t, everyone di struggle, TIDE has to find a way for females to help themselves.” The study already highlights some of the other activities that fishers and tour guides engage in and perhaps would require assistance in training.

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