



DFID Natural Resources Systems Programme

DFID NRSP PROJECT R7976

THE IMPACT OF MARINE PROTECTED AREAS ON POORER COMMUNITIES LIVING IN AND AROUND THEM: INSTITUTIONAL OPPORTUNITIES AND CONSTRAINTS

Appendix 3 – Case Study of Hol Chan Marine Reserve, Belize

December 2002



This document may be referred to as follows: Garaway, C. and Esteban, N. (2002) The impact of marine protected areas on poorer communities living in and around them: institutional opportunities and constraints: Appendix 3 – case study of Hol Chan Marine Reserve, Belize. December 2002.

This activity of the project *Institutional arrangements for Caribbean MPAs and opportunities for pro-poor management* was funded by the United Kingdom Department for International Development (DFID - NRSP LWI R7976). The conclusions and recommendations given in this report are those considered appropriate at the time of preparation. They may be modified in the light of further knowledge gained at subsequent stages of the Project. The findings of this report do not necessarily reflect the opinions or policies of DFID, MRAG Ltd or any other institution with which it may be associated.

The authors of this report gratefully acknowledge help and support from staff and stakeholders during field work at the four case study sites: Princess Alexandra Land and Sea National Park, Turks and Caicos; Hol Chan Marine Reserve and Glover's Reef Marine Reserve, Belize; and Negril Marine Park, Jamaica. We thank those who have commented on this report, in particular J. Gibson. We also thank M. Best, A. Cummings, S. Francis, C. O'Sullivan and R. Richards from UWI, Cave Hill, Barbados whose MSc Theses work contributed to this report.

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Acronyms

AGM	Annual General Meeting
AGRRA	Atlantic and Gulf Rapid Reef Assessment
BAS	Belize Audubon Society
BBRWHS	Belize Barrier Reef World Heritage Site
BEST	Belize Enterprise for Sustainable Technology
BFD	Belize Fisheries Department
BTIA	Belize Tourism Industry Association
CANARI	Caribbean Natural Resources Institute
CBO	Community Based Organisation
COMPACT	Community Management of Protected Areas Conservation Project
CRMP	Coastal Resources Management Project, TCI
CZMAI	Coastal Zone Management Authority and Institute, Belize
DECR	Department of Environmental and Coastal Resources
DFID	UK Department for International Development
EFJ	Environment for Jamaica
EPA	Environment Protection Area
EU	European Union
GEF	Global Environment Fund
GRMR	Glover's Reef Marine Reserve, Belize
HCMR	Hol Chan Marine Reserve, Belize
ICZM	Integrated Coastal Zone Management
LAC	Local Advisory Committee
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MRAG	Marine Resources Assessment Group Ltd
NCRPS	Negril Coral Reef Preservation Society, Jamaica
NEPT	Negril Environmental Protection Trust
NGO	Non-Governmental Organisation
NMP	Negril Marine Park
NPEAC	National Parks Environmental Advisory Committee, TCI
NR	Natural Resources
PA	Participatory Appraisal
PACT	Protected Areas Conservation Trust, Belize
PALSNP	Princess Alexandra Land and Sea National Park, TCI
PAP	Public Awareness Programme
PRA	Participatory Rural Appraisal
PS	Permanent Secretary
RRA	Rapid Rural Appraisal
SEA	Socio Economic Assessment
SI	Statutory Instrument
TCI	Turks and Caicos Islands
TCNT	Turks and Caicos National Trust
UDC	Urban Development Corporation, Negril, Jamaica
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
UWI	University of the West Indies
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund

3 Hol Chan Marine Reserve - Belize

The following information represents the results of field research undertaken in Ambergris Caye, Belize in February 2002 relating to the Hol Chan Marine Reserve (HCMR). Only the *results* for this research are presented here. Methodology can be found in Appendix 1 of this report. Hol Chan Marine Reserve was one of four case studies investigated, the others are discussed in other appendices in this report.

Details of the main contributors of information are mentioned in text where relevant and a list of respondents and interviews is presented in section 3.12. As will be seen in section 3.12, the number of respondents was low, with emphasis being placed on fewer, but in depth, interviews. Whilst this meant that it was possible that opinions collected were not representative of the particular group in question, the principles of triangulation were applied to crosscheck information¹ and representative results were not an over-riding requirement of the research in any case. Being exploratory in nature, views of any individual were useful, and to the extent that they helped to build up an explanation of a case and develop hypotheses, were considered valid.

Ambergris Caye is the largest and northernmost island along the Belize Barrier Reef. In previous times its importance was as a fishing village, but now it is considered to be one of the most important tourist destinations in the country (Alamilla *et al*, 2000). Hol Chan Marine Reserve is located offshore near San Pedro Town, the only established town on the Caye.

3.1 History of park and management

Only a brief outline of some of the major events are given here. More information concerning the park, legislation and conditions surrounding its emergence can be found in (Carter *et al.* (1994), Mascia (2000)). Information about Belizean legislation as regards Marine Parks in general can also be found here and in Richards (2002).

Whilst, traditionally, fishing had always been the primary occupation of the people of San Pedro, by the late 70's and early 80's there were signs that commercially valuable fish stocks were in decline (IUCN, 2000). At the same time the tourism industry was growing and fishermen were finding alternative, or additional, work as tour guides, taking people snorkelling, diving and on fishing trips.

By the mid 1980's, Hol Chan, an area surrounding a cut in the reef near San Pedro became the source of much conflict between the fishers and tour guides. It was both a highly productive fishing ground and an area with unique coral formations and both groups saw the area as important to their livelihoods. It was a need to reduce this conflict and to protect the reef and fishery that catalysed the creation of Hol Chan Marine Reserve. The main events in the creation and subsequent development of the reserve are shown in Table 3-1. This information came from interviews with Park Staff, the Fishers Caribena Co-operative and available literature (in particular Carter *et al.* (1994) and Mascia (2000)).

¹ This involves obtaining information from a range of sources, using a range of methods and a range of investigators and/or disciplinary approaches. Such a method also involves actively seeking out diversity and different perspectives, and investigating, *in situ*, contradictions and anomalies.

Table 3-1 Major events in the creation and development of Hol Chan Marine Reserve

Date	Event
Early 1980's	<ul style="list-style-type: none"> • Conflict between fishers and tour guides in the Hol Chan area • Tour Guides propose ban of commercial fishing in some areas but plan rejected
1985	<ul style="list-style-type: none"> • Beginning of consultations on establishment of an MPA, (spearheaded by researcher from WCS) • Informal advisory committee of local stakeholders established² • Draft management plan drawn up
1986	<ul style="list-style-type: none"> • Public consultation • Fisheries Advisory Board discussed draft plans at great length • Draft management plan submitted to Minister responsible for fisheries for approval
July 1987	<ul style="list-style-type: none"> • Hol Chan Marine Reserve legally established (after plan approved by Fisheries Advisory Board and fisher's co-operative) • Funding from WWF & USAID • Zoning and regulations, as proposed in management plan, implemented
1988	<ul style="list-style-type: none"> • Demarcation of zones A, B & C with buoys and active enforcement of regulations
1989	<ul style="list-style-type: none"> • Legislation regarding park use rights and access rights came into effect
1990	<ul style="list-style-type: none"> • Fee imposed to enter zone A of the reserve • Ministerial Appointment of Hol Chan Marine Reserve Advisory Committee³
1991	<ul style="list-style-type: none"> • 1st meeting of HCMR Advisory Committee • Legal right to enforce regulations given to HCMR staff members (had been enforcing anyway – warnings etc)
1994	<ul style="list-style-type: none"> • HCMR regulations amended to formally establish a trust fund that could hold revenue from fees
Mid 1990's	<ul style="list-style-type: none"> • Funding from WWF finished • Education programme reduced • Annual consultations with dive shops stopped • HCMR Advisory Committee stopped meeting and Hol Chan Marine Reserve Trust Fund⁴ set up to enable them to access/manage funds
1996	<ul style="list-style-type: none"> • Increased fee charged to tourists for access to Marine park
1997	<ul style="list-style-type: none"> • New offices bought from the Caribena Co-operative
1998	<ul style="list-style-type: none"> • National Protected Areas Conservation Trust (PACT)

² Informal advisory committee included representatives from the San Pedro Tourism Industry Association, San Pedro Tour Guide Association, Caribena Co-operative, Fisheries Department and the Wildlife Conservation Society.

³ Assumed responsibility for making decisions regarding management of the HCMR even though had no statutory basis or legal authority to do so. Members included the Fisher's co-operative, Tourist Guide Association, local hotels and restaurants.

⁴ A statutory body with similar mandate but not the same degree of local representation (Mascia, 2000).

Date	Event
	institutes 20% levy on all revenues generated by protected areas in Belize
1999	<ul style="list-style-type: none"> • Legislation for further fee increase passed with minimal consultation
2001	<ul style="list-style-type: none"> • Fee increase implemented

In his doctoral thesis, Mascia (2000) identified three stages in the evolution of Hol Chan Marine Reserve. First (1960's –1989) was the emergence of the reserve, the second phase (1990 – 1994) was improving regime performance, and the third phase (1994 –1997), maintaining existing levels of performance and buoying the administrative capacity of the HCMR. This 3rd phase Mascia described as a period of "institutional 'consolidation'" (Mascia, 2000, p.266).

3.2 Current management practices and park activities

Information from this section came from discussions with park staff and the annual reserve report submitted to the Belizean Fisheries Department (BFD) (Alamilla, 2001).

3.2.1 Activities within the marine park

Figure 3.1 shows a map of the Marine Park and its different zones. It is located approximately 4 miles southeast of San Pedro Town, spanning from the coral reef to the southern tip of Ambergris Caye. It is approximately 18km², including areas of coral reef, sea grass and mangrove ecosystems. Being offshore, the Reserve did not encompass any beach or other land areas. The Park is split into four zones, indicated on the map.

Zone A – Approximately one square mile. Reef and channel forming natural break in reef. The recreational area of the reserve (and one of the most popular dive and snorkelling sites in Belize). Only activities allowed were diving and snorkelling under supervision and on payment of a fee.

Zone B – Sea grass habitat. Commercial fishing⁵ and sport fishing were allowed on acquisition of a license.

Zone C – Mangrove habitat. Sport fishing only on acquisition of a license. No clearing of mangroves or plants was permitted.

Zone D – Shark Ray Alley. Second recreational area for snorkelling under supervision and on payment of a fee - commercial and sport fishing were allowed in some areas of this zone⁶.

The principal activities that were occurring within the park (besides those of park staff included;

- Snorkelling
- Diving
- Commercial fishing⁷

⁵ Only fisherman who traditionally used this area were allowed to continue fishing here. No trawling or spear fishing.

⁶ At the time of this research (02/02) this area was not physically demarcated.

⁷ In Zone B, traditional fishers used traps (*nasa*) and lobster sheds, according to a system of territorial use rights, to catch lobster.

- Sport fishing

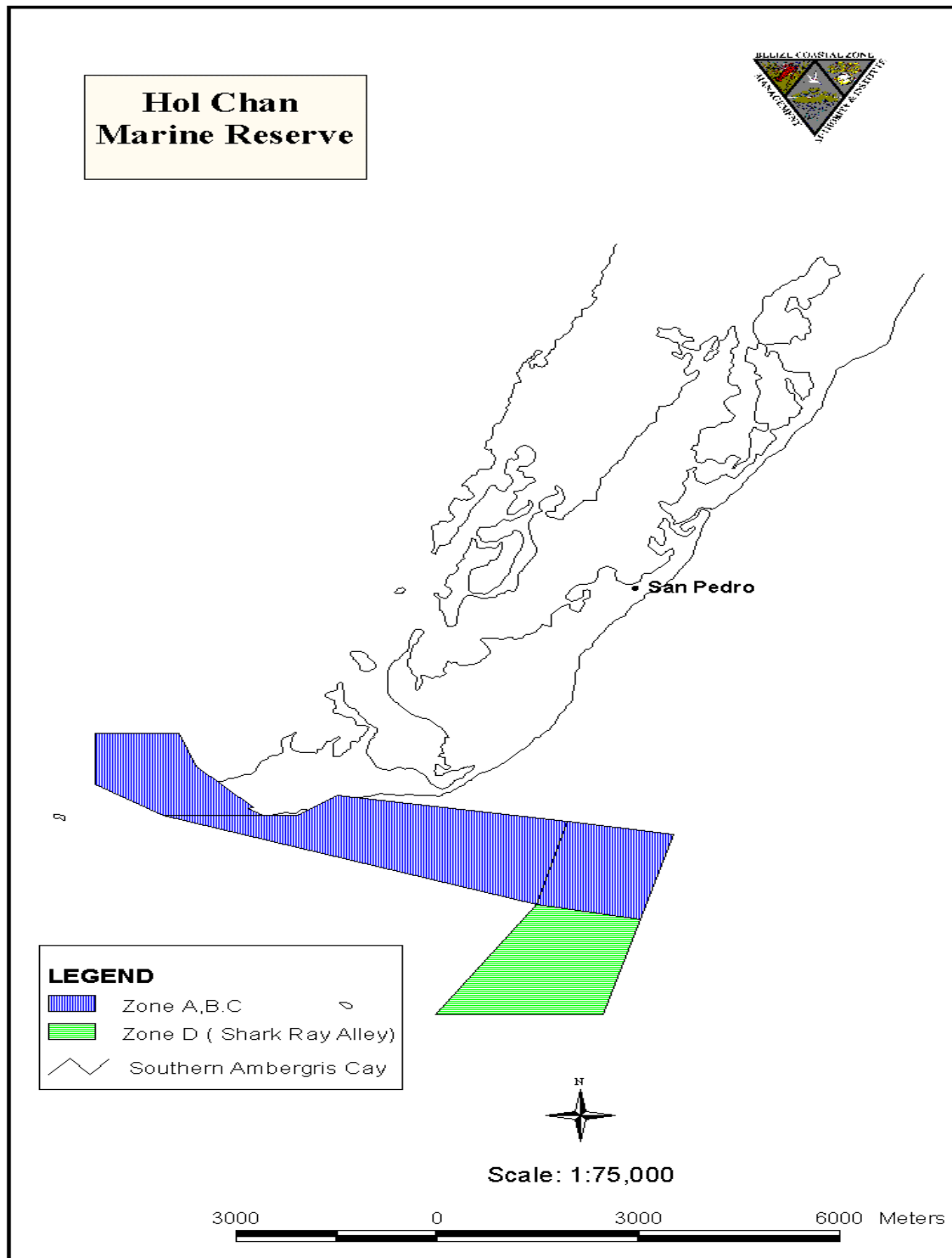


Figure 3.1 Map of Hol Chan Marine Reserve⁸

⁸ Taken from Richards (2002).

3.2.2 Current (or recent) activities of Marine Park staff

At the time of the research, there were 5 marine park staff members and one Peace Corps volunteer involved at HCMR. Table 3-2 outlines the activities that were being carried out, as described by the Park staff. The updated management plan (Young and Bilgre, 2000) recommended activities in several areas and current activities are here set against those. Not all activities carried out are necessarily mentioned here, but only those deemed relevant by staff at the time of interviews.

Table 3-2 Current or recent activities of Marine Park staff

Recommended Activities	Specific activities
Zoning Plan	<ul style="list-style-type: none"> • Repairing & fixing buoys
Enforcement & Surveillance	<ul style="list-style-type: none"> • Patrolling and checking correct procedures by tourist, tour guides⁹
Research & monitoring	<ul style="list-style-type: none"> • Long term health of coral reef¹⁰ • Lobster survey¹¹ • WRIScS water quality monitoring & benthic mapping¹²
Interpretation & Education	<ul style="list-style-type: none"> • Summer environmental education camp in collaboration with Green Reef & US college • Fundraising for new schools project (proposal writing)¹³
Environmental management	<ul style="list-style-type: none"> • Liaising with other departments (dredging – Department of Environment; mangrove protection – Forestry Department)
Recreation & Tourism management	
Administration & maintenance	<ul style="list-style-type: none"> • Attendance at training courses and national & international workshops • HCMR Trust Fund meetings
Financial Sustainability	<ul style="list-style-type: none"> • Meetings with dive operators • Implementing new visitors fee (Shark Ray Alley) • New accounting system for Reserve's financial operations • Negotiations with PACT re-paying arrears on 20% annual fee.

Discussions with the manager suggested that many activities had had to be cut back, in particular since WWF funding ended in 1995. He particularly mentioned cut-backs in scientific research & monitoring, environmental education and patrolling. Whilst they used to have a very active education programme, this faded when the last manager left and WWF funding stopped. Most environmental education on the island was currently being carried out by the NGO Green Reef. They hoped this would change once they had procured more funding and they had written a proposal to this

⁹ Patrolling cut back due to lack of funds

¹⁰ Setbacks due to lack of personnel and/or funds

¹¹ Not every month due to lack of personnel

¹² Carried out in 2001. Problems due to malfunctioning of some equipment

¹³ Education programme in general seriously set back by lack of funds

end. They had also dropped one patrol shift (5am – 9am) because of lack of funds, and again hoped that increased revenue, generated by the reserve fee increase, would change the situation.

3.2.3 Role and function of organisations collaborating with, or involved in management of, HCMR

The administration of HCMR was carried out by the Fisheries Department (within Ministry of Agriculture, Fisheries and Co-operatives) with staff being employees of the fisheries department. Policy and laws governing the reserve were concentrated at the Ministerial level.

3.2.3.1 *The Hol Chan Marine Reserve Trust Fund Committee*

The Hol Chan Marine Reserve Trust Fund Committee, set up in 1994, consisted of nine members from the private and public sectors who managed the financial affairs of the reserve and directed and managed the affairs of the reserve. This committee, as decreed by Statutory Instrument (S.I.) 170, included the following members;

- Manager, Hol Chan Marine Reserve
- Chairman Hol Chan Advisory Committee¹⁴
- Chairman Fisheries Advisory Board
- Fisheries Administrator
- Financial secretary from Finance Ministry
- National Co-ordinator Science Advisor of the GEF
- Chairman of Caribena Fishermen Co-operative
- President of San Pedro Belize Tourism Industry Association (BTIA)
- President San Pedro Chamber of Commerce

Originally there was also a HCMR Advisory Committee that contained people from the local community whose function was to assist marine park staff, report on environmental matters and ensure that the community had continued input in the running of the reserve. Whilst their continued role was recognised as important in the updated management plan, according to the current manager as soon as there were two organisations the Advisory Committee fizzled out (Alamilla, pers. comm.¹⁵). The manager agreed that this meant there was a lack of community participation, but they were trying to rectify this by adding some local representatives to the Trust Fund Committee. Such changes had to be authorised by the Ministry and therefore took time.

3.2.3.2 *PACT*

Another organisation with which the HCMR had involvement was the Protected Areas Conservation Trust (PACT). At the time of the research their relationship with this organisation was not a positive one.

On the one hand PACT required, by law, that HCMR gave 20% of their gross earnings to PACT (as did all other protected areas in Belize)¹⁶. This was not an issue

¹⁴ Currently this position was not filled as the Advisory Committee did not appear to be in existence

¹⁵ Miguel Alamilla, Manager, HCMR

¹⁶ Since this research was undertaken, the new PACT Act, passed in October 2002 allows for the 20% that used to go to PACT to be retained by the management agency. This can be

for most protected areas as self-generated revenues represented a tiny fraction of their total operating budget. In contrast, at Hol Chan Marine Reserve, its entire operating budget was derived from user fees, which, according to the Manager, was not operating at a profit. Handing over 20% would therefore result in a significant reduction in their operating costs and Hol Chan had refused to pay the money due.

On the other hand, PACT in turn used the money it raised (which included a % of the airport departure tax) to fund proposals put forward by the protected areas of Belize. It was felt by the staff at HCMR that, firstly, PACT favoured terrestrial areas over marine areas, and secondly, given their problems with PACT, they were unable to benefit from these grants.

At the time of this research, talks were occurring with PACT to cancel what was owed and develop a more reasonable arrangement (see footnotes). However, PACT were under a different Ministry¹⁷ to HCMR, and again progress was slow.

3.2.3.3 *Green Reef*

The only other organisation mentioned in connection with the HCMR during our visit was Green Reef, a local NGO set up by San Pedrans in 1996 to promote “interest in wildlife and conservation of our natural resources among students, teachers, tourism guides, fishermen, visitors and the general public” (Green Reef Leaflet). The main activities it was currently involved in (only 1 fully paid staff member and 1 Peace Corps volunteer) included;

- Environmental Education in schools & with Tour Guide Association to train adults wishing to obtain a Tour Guide License (major activity)
- Reef Mooring Buoy project
- Bird Sanctuary
- Nassau Grouper Research Project

Surprisingly it had little formal connection with HCMR, though HCMR had hired them as consultants in environmental education and Green Reef helped HCMR with their summer school. Green Reef were a possible consideration for joining the Board of Trustees but it was felt by some that they were not yet organised enough (Alamilla, pers. comm.)

3.3 Opportunities and constraints of management as perceived by implementing organisations.

3.3.1 Strengths and/or opportunities recognised by those collaborating with, or involved in management of, HCMR.

In this section positive attributes of management and/or opportunities for the future are those cited by the Marine Reserve staff themselves or those in some way linked with its management. Positive attributes and opportunities as perceived by members of the local community are presented in section 3.10.

used for the maintenance and upkeep of the protected area where it was collected. (Gibson, pers. comm.)

¹⁷ Ministry of Natural Resources, the Environment, Trade and Industry

Throughout interviews it became obvious that the principal current strength of the Marine Park, as perceived by those involved in management, was the continued move towards financial sustainability. Whilst other programmes had been strong in former times (such as education), these had been severely hampered by the fact that they were financially unsustainable, something which they hoped would become a thing of the past. The establishment of the Trust had been a very important development in this, allowing them to access the monies raised from visitor fees and licenses. Much energy in the past year had focused on further developing financial and administrative sustainability including increasing park user fees, developing administrative systems, negotiating with PACT and writing proposals to start a new Education Programme. The manager wasn't yet sure whether the Park fee increase would solve their financial problems but was sure that it would make a significant difference. Staff believed that their quasi-independent status, with ability to make at least some of their own decisions (without going to the Minister), was a significant opportunity for the future.

3.3.2 Weaknesses and/or constraints recognised by Marine Park Staff

Without a doubt, the major constraint was perceived to be a general lack of funds and also continuous uncertainty about funding. This was mentioned by all interviewed and in almost all cases was seen as the single largest constraint. Some of the problems that HCMR was held at least partially, if not fully responsible for, are listed in Table 3-4. Despite its predominance, funding was not the only problem and/or constraint recognised and the others (and problems they caused/were causing) are also shown in Table 3-3.

Table 3-3 Constraints perceived by Park staff

Constraint	Some of problems caused
Lack of funding Uncertain funding	<ul style="list-style-type: none"> • Lack of scientific research & monitoring • Reduction in patrolling shifts and insufficient wardens • Reduced education programme to almost non-existence • Unable to fix equipment • Staffing problems (particularly recruiting biologists)
Too many decisions need to be made at Ministerial level	<ul style="list-style-type: none"> • Delay in putting in place new user fee system and other initiatives • Slow to change membership of Trust Fund Committee • Annoyance and distrust of local dive operators¹⁸
Legislation requiring they give 20% gross earnings to PACT & bias of PACT granting proposals for terrestrial Parks only	<ul style="list-style-type: none"> • Financially crippling as they don't make a profit • Difficult to get grants from PACT
Funding system dependant on high tourist visitation	<ul style="list-style-type: none"> • Could impact on health of reef
Lack of patrolling	<ul style="list-style-type: none"> • Recreational fishing guides breaking

¹⁸ When new fee scheme introduced, locals could not remember that they had been consulted about this and there was considerable resistance to it (Alamilla, pers. comm.)

	regulations
Resource use conflicts at Hol Can Cut & Shark Ray Alley. Lack of clear boundaries in zone D	<ul style="list-style-type: none"> • Possible deterioration of reef
Lack of community representation in Trust Fund Committee	<ul style="list-style-type: none"> • Losing good relationship with local community
Reduction in levels of communication with local community & difficulty in getting their attendance at meetings	<ul style="list-style-type: none"> • Losing good relationship with local community

The time of this research appeared to be a particularly sensitive time for HCMR. They had received a lot of opposition to the new user-fees from the local community and were not very popular with them at that time. This, they believed, was a significant problem and more effort would have to be spent on community outreach in the coming months.

3.4 Identification of stakeholders groups, including the poorest, using, or living in and around, the MPA

No literature was available at the time of the case study research to enable us to build up a picture of the extent of poverty and livelihood options for poorer groups working in and around the Hol Chan Marine Reserve. To identify poorer user groups in the community, the main focus of this research, the HCMR staff, most of whom had lived in the area all their lives and many of whom had worked frequently with sectors of the local community, worked together to develop a profile of park ‘users’ or potential beneficiaries and their relative socio-economic status.

Table 3-4 shows the results of a group session assessing the nature of poverty in communities in and around the park. Respondents were first asked to consider what they thought were the main indicators of poverty and/or wealth. They were then asked to identify skills, opportunities and constraints for the different wealth groups and then suggest occupations/livelihood options that were predominant in the different groups¹⁹. Finally a star rating system was applied to ascertain which occupations they thought were most impacted on by the park (** maximum). These results were used to identify priority stakeholder groups for interview (these groups are *italicised* in the table²⁰).

Table 3-4 Results from stakeholder analysis with staff from Hol Chan Marine Reserve

Poorer (30%)	Middle	Richer (30%)
<i>Assets + or -</i>		<i>Assets + or -</i>
+Family +School		+Political connections +Higher education +Money (\$) +Land
<i>Skills, opportunities,</i>		<i>Skills, opportunities,</i>

¹⁹ Surprisingly construction workers were not identified in the table anywhere and this is most probably an omission as there were many on the Caye.

²⁰ Whilst it was hoped that we would be able to interview individuals and/or groups from all these stakeholder groups, time constraints meant that this was not possible. In particular taxi drivers, security guards and construction workers were not interviewed, nor were we able to find fishers from the mainland, though full time fishers from San Pedro were found. A full list of respondents is given in section 3.13.

constraints		constraints
C Mainlanders (landless) C Language (no English in some cases) C No work permits		O Family connections O Influence
Jobs / Livelihood Options	Jobs / Livelihood Options	Jobs / Livelihood Options
Gardeners* Construction** Addicts Kitchen staff** Wood carvers/beach vendors** Mainland fishers** Hotel housekeepers** Security guards** Taxi drivers**	Bartenders** Accountants Doctors* Secretaries Tour guides*** (99% of former fishers) Water sport operators** Clerical staff Island fishers** Government officers Teachers Small business owners* Guest house owners** Teachers	Entrepreneurs (e.g. construction) Hotel owners** Dive shop owners*** Golf cart rentals** Hardware store owners* Supermarket owner Restaurant owners** Bar/nightclub owners** Shrimp farmer

In sharp contrast to Negril and Providenciales (two other tourist centres with marine parks in this research), the immediate and principal benefactors of tourism development had very much been the local residents of San Pedro themselves. In the main, they owned the hotels, restaurants and watersports operations and most of the fishers had become tour guides or at least combined this with fishing. The start of the lobster season coincided with the low tourism season so many tour guides swapped jobs, fishing for a month or so during low tourist season and the peak lobster season.

Benefits from tourism had been so great and widespread that the Marine Park staff doubted many, if any, of the original local residents would be in the lowest 30% with regards wealth. Instead they believed this sector would be filled with immigrants from the mainland or other countries. A study by UNHCR²¹ had apparently reported that 33% of Belizean population are immigrants from Central America. Staff thought it would be far greater on Ambergris Caye because of economic opportunities there.

The staff felt that land and housing were the principle indicators of wealth in their area. Immigrants were at a disadvantage on Ambergris Caye as, even if they had land back home, they were essentially landless on the Caye. Some of the immigrants were seasonal and almost all, it was felt, would be sending money back to their families on the mainland. Another disadvantage was that many of the immigrants didn't speak English and that was a constraint to getting into the tourist industry, where English was the first language spoken.

These comments were backed up by staff interviewed at the San Pedro unemployment office who also agreed that most of those in the poorer sectors came from the mainland. Unemployment was a problem amongst the immigrants, and the people that came to the office generally had the following characteristics:

- Not much education – up to primary level only.

²¹ Information from park rangers, reference unknown.

- Not from San Pedro or in some cases Belize (e.g. Guatemalans who had since been nationalized, Belizeans from Placencia and other places down south that had been struck by the hurricane).
- Little experience of the tourist industry (agricultural backgrounds e.g. banana industry).

These people were trying to get jobs as housekeepers, maids, construction workers, or kitchen staff but lack of education, experience and English language were constraints.

3.5 Identified potential benefits and costs

After developing an understanding of, firstly, the marine park and its activities and secondly, poorer groups and their use (or potential use) of the marine park area or the services of the marine park staff, it was possible to identify any potential beneficial and non-beneficial impacts of HCMR and its management on poorer communities.

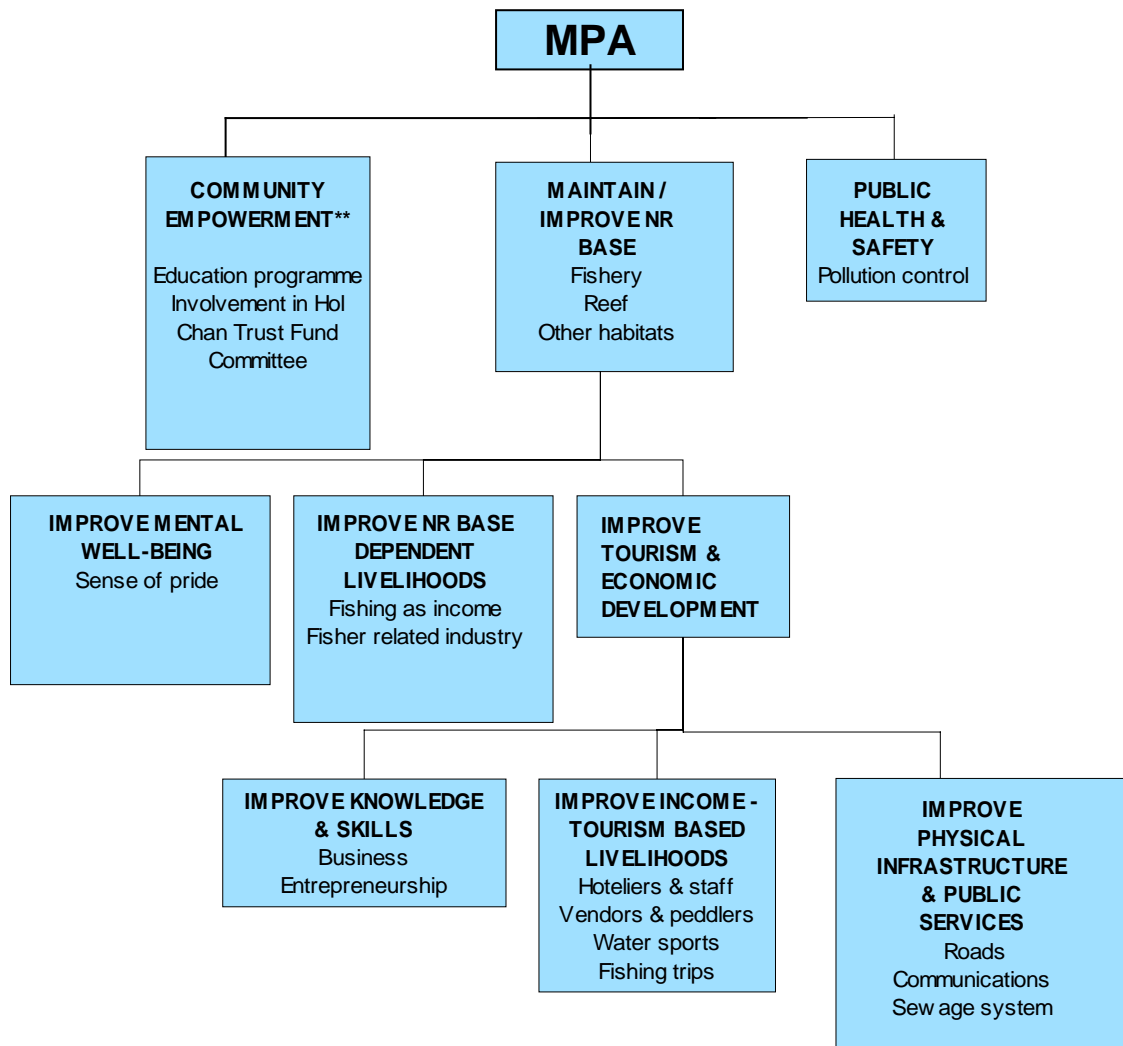


Figure 3.2 Potential beneficial impacts (to poorer groups) of HCMR management and services

These impacts are outlined in

Figure 3.2 and Figure 3.3 respectively. All possibilities, large or small, likely or highly unlikely are listed here. Some of the more important or relevant potential impacts became the objects of further investigation and are discussed in the remaining sections of this appendix.

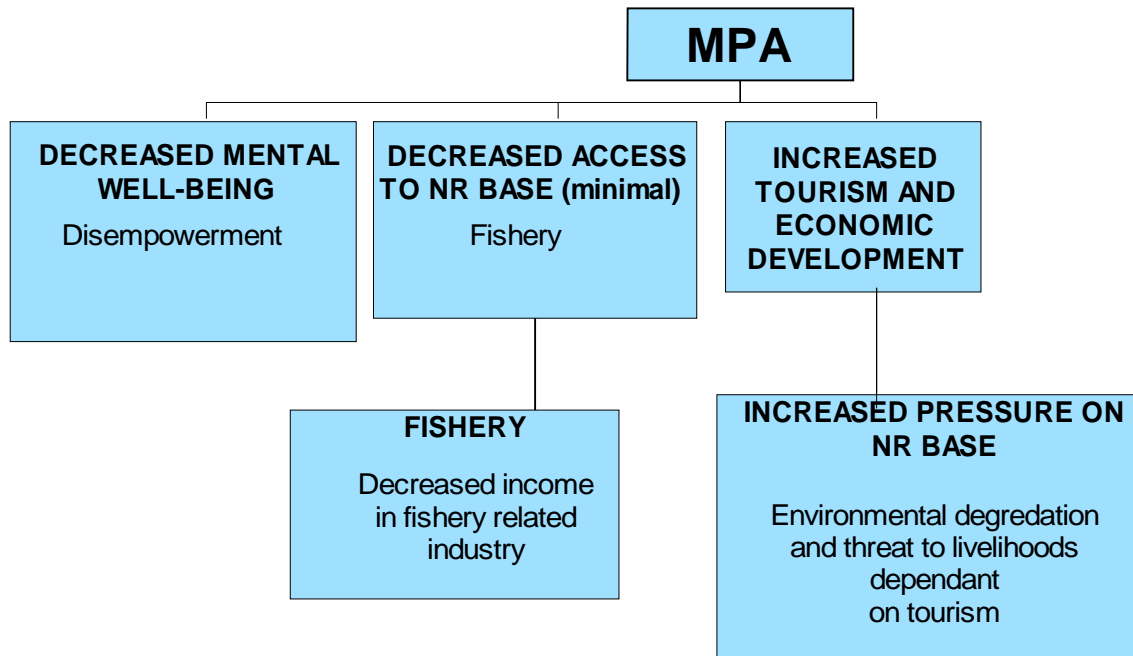


Figure 3.3 Potential non-beneficial impacts (to poorer groups) of HCMR management and services

3.6 Ecological impact of HCMR on reef and fishery

HCMR covers an area of 18km² and has coral reef, seagrass beds and mangroves within its boundaries. There is a long term environmental monitoring programme managed by HCMR however surveys have been inconsistent due to lack of personnel and funding (Alamilla, 2001). The assessment of ecological impacts of HCMR relied heavily on research carried out by Cummings (2002), which included a review of available literature.

3.6.1 Fishery

HCMR was claimed to be one of the most successful MPAs in the world by Roberts and Hawkins (2000) as their findings showed that within four years of establishment, HCMR supported higher densities of large fish than any other coral reef habitat they had visited. They also found that the total biomass of commercially important reef fish was 50% greater at the edges of Zone A (no fishing zone since 1987) and that several important species not present in fishing grounds were found in Zone A (including grey snapper *Lutjanus griseus*, black margate *Anisotremus surinamensis* and saucereye porgy *Calamus calamus*). These observations were also supported by another comparison of fish abundance at protected and unprotected sites (Sedberry *et al.*, 1994) and, in general, were supported by a fishers survey and landing records comparison from Caribena Cooperatives which indicated an increase in catch for lobster and conch from 1988-1989 (Young and Bilgre, 2000).

Fish abundance at a protected site (Hol Chan) and unprotected site (Mexico Rocks) was surveyed during 2001 (Cummings, 2002) and results show that, although fish were abundant and diverse at both sites, the abundance and number of species was higher at the protected site. These results suggested that the fishery has benefited from protection by HCMR. Comparison of fish size between the two sites for three important species of grunt and snapper (*Haemulon sciurus*, *Haemulon parra*, *Ocyurus chrysurus*) showed that the mean size of fish was either not significantly different, or was significantly smaller at the protected site which appeared to be driven by a high proportion of young individuals at the protected site, rather than lack of larger fish (Cummings, 2002).

Lobster surveys clearly demonstrated that there were more lobsters within the HCMR than in other areas (Young and Bilgre, 2000). A recent survey (2000-2001) of spiny lobster populations in Zone A suggested that annual monthly distributions of lobsters in HCMR were consistent but that numbers were affected by heavy fishing at the opening of the season (Alamilla, 2000). There was no clear impact of the protection on the population due to high mobility of lobster and the relatively small size of Zone A (Alamilla, 2000). Conch surveys showed similar trends to those for lobster, and both juveniles and adults were found in lesser densities outside HCMR (Young and Bilgre, 2000).

3.6.2 Coral Reef

There has not been a regular monitoring programme at HCMR and no long-term comparisons were available. A study investigating the influence of disturbances on coral reef communities of Belize (including sites at HCMR and GRMR) concluded that MPA status was an influential variable and that MPAs had an important effect on benthic reef community structure (McField, 2001). Cummings (2002) found that the protected site at Hol Chan had much higher hard coral cover and lower macroalgae cover than the unprotected site.

3.6.3 Summary

There was considerable evidence of positive ecological impacts of HCMR since its establishment as detailed above (Roberts and Hawkins, 2000; Sedberry *et al.*, 1994). Comparison of the protected site (Hol Chan) within HCMR and an unprotected site (Mexico Rocks) in 2001 indicated that there were better ecological conditions at the protected site which had significantly higher hard coral cover, higher mean fish abundance and lower cover of algae. Results of stakeholder surveys correlated with results of SCUBA surveys and historical data and it appeared that the better ecological conditions observed within HCMR were due to protection (Cummings, 2002).

3.7 Importance of HCMR to the tourist industry

Both the available literature and all interviewed agreed that HCMR was important to tourism development in San Pedro and the tourist industry in Belize generally.

In 2001, Hol Chan had been the most visited protected area in the country with a total of 38,687 visitors (Alamilla, 2001), an increase of 5% from the preceding year. San Pedro was also at the centre of the tourism industry in Belize offering a wide variety of recreational activities ranging from sport fishing, diving, snorkelling, birding, and manatee watching (Mascia, 2000). According to the Belize Tourist Board in

1998 (reported in Mascia, 2000) more than 60% of tourists visiting Belize spent a portion of their vacation in the Northern Cayes, with almost all tourists engaging in at least one of either snorkelling, scuba diving or sport fishing. The area within the HCMR was one of the principal sites in the Northern Cayes for all of these activities, particularly snorkelling.

Whilst tourism began in the Northern Cayes (and San Pedro itself) in the 1960's before the Reserve was established, the importance of the area, now part of the reserve, was recognised by the local community by at least the late 70's/early 80's when local tour guides put forward a proposal to limit commercial fishing along the barrier reef in front of San Pedro Town (Carter *et al.* (1994)). In addition, whilst the draft proposal for the establishment of HCMR had been developed by researchers not resident on the Caye, local people had been involved and consulted from the onset and their support for the existence of the reserve still continued.

The importance of HCMR to tourism development was not questioned by local stakeholders though there was growing concern, particularly among park staff but also amongst some of the local community (hoteliers, watersports industry), over the impact of increasing numbers of tourists on the reef itself. Extremely high visitation numbers could threaten the reefs and Park staff were anxious to carry out a carrying capacity survey to establish optimum visitor numbers. A number of respondents were concerned about the growing numbers of visitors from cruise ships who were not given proper instruction before diving and snorkelling and therefore were inadvertently damaging the reef. There was generally concern from HCMR staff and the tour guide industry, that tour guides from cruises were not properly trained or adequately overseeing the activities of their customers (see section 3.10 for current perceived constraints of HCMR management).

3.8 Impact of HCMR on poorer groups involved in the tourism industry

With its undisputed impact on, and importance to, the tourist industry, the presence of the marine park had undoubtedly directly and indirectly created opportunities in this sector. This section looks at the extent to which this had benefited or continued to benefit poorer sectors of the community and whether people from these groups considered that the HCMR had brought them any other benefits.

Livelihood options of poorer sectors involved in the tourism industry were identified in section 3.3.2., with most considered to be immigrants from the mainland. Crucially, those directly dependent on the reserve area, the watersports and recreational fishing industry, were not considered to be in the poorest sector of the community. However, views of these stakeholders were sought as it was the advent of the tourism sector (and the switch in livelihood options it brought about) that was widely perceived to have raised their standard of living from this 'poorer' group. A hotelier family was also interviewed for the same reason.

The views of craft vendors and hotel staff, people still considered to be in the 'poorer' sector were also sought²². Whilst they themselves did not directly use or rely on the HCMR for their livelihoods, the HCMR did bring in tourists on whom they depended and therefore their views on the importance of HCMR to them were considered valid. It was also relevant to see whether they felt able to fully benefit from the development

²² Unfortunately due to time constraints these were the only user groups from this sector that were interviewed.

of tourism and whether they felt they benefited in any other way from the marine parks existence. Table 3-5 shows a summary of some of the potential beneficial and non-beneficial impacts of HCMR (first suggested in section 3.5) that might specifically impact on poorer stakeholders involved in the tourist industry.

Table 3-5 Potential impacts of HCMR specifically on poorer stakeholders involved in the tourist industry

Beneficial impacts	Non-beneficial impacts
Improve tourist environment, hence increased tourism development with advantageous economic or social consequences e.g. <ul style="list-style-type: none"> • Improved conditions, more opportunities for employment • Improved services 	Increased tourism development with deleterious economic or social consequences e.g. <ul style="list-style-type: none"> • Inability to access tourist industry • Increased costs of living
Improved knowledge and skills	
Increased social capital	

3.8.1 Impact of the park on livelihoods of original San Pedrans

From literature and the opinions of native islanders it was clear that tourism had already had a substantial beneficial impact on the local community, raising the standard of living, it would appear, of *all* original San Pedrans. Those asked certainly considered themselves as 'poor' back in the 70's talking of the poor facilities and services back then (e.g. outside toilets, poor water facilities, poor housing).

According to those interviewed, tour guiding was seen as a preferred profession to fishing both because it earned them more money and it was far easier. The fact that the fishery was in rapid decline when tourism started had encouraged many fishers to switch and, given that many already had boats and a good knowledge of the marine resources, they were in a good position to fill the demand for guides. Guides either worked for themselves (if they had a boat) or they were affiliated to a watersports shop. The advantage of this was that the shop often paid for the individual's tour guide licence upfront and then deducted it from the guide's wages. In the opinion of the guides, obtaining the license (which also required attending seminars and a training course) was not hard but they did feel that it might be harder for newcomers (in particular, non English-speaking immigrants with no local knowledge).

According to one recent school leaver, most San Pedrans intended to stay on the island when they left school (up to 90%) because of the vast opportunities not only in the tourist industry but also the supporting services (banking, shops) which she suggested, were perceived to be more desirable.

The extent to which *local* communities benefited from tourism here is in stark contrast to other case studies in this report (such as Negril, Jamaica and, in particular, Providenciales in the Turks and Caicos). In contrast to those places, it was the locals themselves that drove tourism as opposed to developers from elsewhere in the country or from overseas. Almost all hotels and restaurants on the island were family run and there were few large resorts. The lack of all-inclusives also meant that small businesses could benefit more from tourists. In addition, whilst immigration from the mainland occurred, mainlanders were not taking jobs away from locals, who, in the main, had already found their niche in the tourist industry.

Why the situation in Belize was different from that in other case studies was not entirely clear. It is possible that the difference may have been facilitated by the legal requirement for tour guides to be Belizean, preventing overseas developers from bringing in their own staff. Alternatively, (or in addition), the presence, organisational strength and power of user associations connected with the tourism industry such as the San Pedro Tour Guide Association²³ and the Belize Tourism Industry Association (BTIA), may have been fundamental in ensuring that benefits stayed with locals. Mascia (2000) suggests that it was the powerful fishing co-operatives that facilitated the emergence and success of these other newer organisations who, like the fishing cooperatives before them, appeared to protect the interests of their members well²⁴. With established organisational structure and *modus operandi*, the fisher's co-operatives provided a good model on which successive associations could be based.

The case of Ambergris Caye is a good example of tourism development that brought benefits to its local community and lessons should be learnt from how this was achieved.

When looking specifically at the impact of the HCMR in this, it seems clear that in the opinion of locals and available literature, HCMR was instrumental in protecting the natural capital upon which San Pedran tourism (to a certain extent) depended. However it did more than this. Firstly, not only did it aim to protect the area, according to local business it also had a significant role in marketing the reserve as a tourist attraction. Secondly, the way in which the HCMR emerged may have helped to build social capital (in terms of reducing conflict, enhancing social cohesion, bringing different stakeholders together) in a way that encouraged local initiative. Whilst not definite it seems quite likely²⁵ that consultation during the establishment of the Hol Chan Marine Reserve would have been one of the first times that different stakeholder groups had got together and worked towards a common goal. Lastly, high levels of environmental awareness on the island, that, certainly initially, ensured tourism developed in an environmentally friendly way can also be attributed in part to the educational efforts of the Marine Park. However there was concern from local islanders that development was now going on unchecked and this would have serious negative environmental consequences. Local native islanders were also very vocal in their concern over the current running of the park and the perceived environmental threats posed by tourist malpractice. This they believed could seriously impact on their livelihoods and these opinions are expressed in section 3.10.

3.8.2 Impacts of HCMR (and tourism) on craft vendors and hotel staff

In total two housekeepers, two shop assistants and four wood carvers were interviewed. All were immigrants (San Ignacio, Belize City, Southern Belize) and had been living on the island from between 5 –20 years. Two of the wood carvers only worked on the Caye during the high tourist season. All said they had come to the island because there were more opportunities for them here than back at home and that it had been a good move. Their knowledge about HCMR management varied considerably but all believed that that the area was a crucial tourist attraction and one that should be protected. In this sense, the respondents though HCMR was important

²³ The oldest, largest and most powerful tour guide association in Belize.

²⁴ 40% of the hotels, restaurants, dive shops and other tourism businesses that comprise the 120 members of BTIA are based in Ambergris Caye.

²⁵ Likely in the sense that it was only around this time that different stakeholder interests were forming as there was a move away from traditional fishing practices.

for their security. Those who had been on the island longer also mentioned some negative aspects of tourism development. These included an increase in crime, population and traffic.

Unfortunately we did not speak to people who had more recently come to the island but it seemed that there had been a large increase in people in the last year or so partly as a result of recent hurricanes (which had simultaneously created a boom in the construction industry on the Caye and secondly destroyed the livelihood of those working in agriculture (e.g. banana plantations on the mainland). People were attracted here because of the higher wages. One respondent stated that, for example, in the banana industry you could expect to earn \$150Bz/fortnight whereas wages for hotel staff on the island were up to \$5-6Bz per hour and, in the construction industry, \$40Bz/day.

Regarding entry into the tourist industry, those interviewed had not had a problem finding work. Two of the woodcarvers, in separate interviews, thought the system of tour guiding had problems. One thought that there was 'too much red tape' surrounding becoming a tour guide – referring to the courses that had to be attended, and all the licenses and safety equipment required. These he perceived were significant constraints. The other, echoing some of these opinions, thought that the system favoured people who had good education over those who actually knew about the sea (which he considered to be far more important).

With the exception of one wood carver who thought that the increase in user fees imposed by the Park would have a detrimental knock on effect on his business, none thought the park had impacted on them negatively. Aside from its indirect role in attracting tourists, none thought it had directly impacted on them positively either. There was no mention of any education or outreach, or the parks' role in environmental protection more generally. Opinions of the Park where they existed (as was the case with respondents in section 3.8.1), largely centred on the extent to which respondents perceived they were succeeding in protecting the 'tourist' zones of the Park (Zones A&D). These opinions are summarised in the section 3.10.

3.9 Impact of HCMR on fishers

In this section results from discussions with fishers are presented. In the stakeholder analysis, the only full time fishers identified were said to come from the mainland, and these fishers were placed in the poorest group. According to the HCMR staff (& backed up by literature) the vast majority of local fishers had become tour guides in the early-mid eighties and these individuals had benefited from tour guiding to the extent that they could no longer be considered to be in the poorer groups. However, it was interesting to talk to these ex fishers to see whether they had agreed with the Park and whether its impact had been totally positive. Also whilst we were unable to find any mainland fishers we did interview some fishers from San Pedro, though it was unclear what relative socio-economic category they came from.

In Figure 3.2 and Figure 3.3, potential beneficial and non-beneficial impacts of MPA's for these groups were identified. The main potential impacts on fishers are summarised below and the extent to which they were or were not the case formed the basis for our discussions with the fishermen.

Table 3-6 Summary of potential benefits and costs as they might affect fishers

Beneficial impacts	Non-beneficial impacts
Improved natural resource base and hence fishing related livelihoods	Decreased access to traditional fishing grounds with deleterious effect on catches or effort
Fisher empowerment and reduced conflict	
Increased tourism development with advantageous economic or social consequences e.g. <ul style="list-style-type: none"> • Increased market • Improved services • Provide alternative opportunities in the tourism sector 	Increased tourism development with deleterious consequences e.g. <ul style="list-style-type: none"> • Environmental degradation and further decline of the fishery
Improved knowledge and skills	

3.9.1 Fishing practices in and around HCMR

In this section we are specifically looking at the activities of commercial as opposed to sport fishers.

According to interviews and literature sources (Carter *et al.* (1994); Mascia (2000)), by the mid 1980's San Pedranos had largely abandoned the fishing industry in favour of the tourist industry. Whilst there were still some full time fishers, most San Pedranos now only fished the reef near Ambergris Caye, and most only as part of an intense pulse of fishing effort during the first few weeks of the lobster and conch seasons respectively, when catches were highest. (Mascia, 2000). This information was backed up by an interview with the manager of the Caribena Co-operative Office in San Pedro who said that he had 135 members, but only 10 of these were full time and the other 125 fished only when the season started.

The principal commercial species were conch and lobster, with each having closed seasons (national legislation). The lobster season ran from 15th June – 14th February whilst the conch season ran from 1st October to 31st May. Fishing for these species was carried out with different types of trap (traditional method with territorial use rights for setting traps) or by diving. When the lobster season was closed full time fishers hand-lined for snappers and grouper.

3.9.2 Impact of park management on the status of the fishery (opinion of fishers)

Only one person interviewed was still a full time fisher, with the others combining fishing with guiding. All spoken to (full and part time fishers and the Caribena Co-operative, see respondents, section 3.12), said that the fishery had been in decline before HCMR existed and this was one of the reasons for the Park's establishment. The main reason for its decline was thought to be increased fishing pressure²⁶. The fishers spoken to were positive about the impact of the Park on the fishery though they saw it as localised and not substantial. More important were natural trends and in particular bad years. A greater impact, and a negative one had been Hurricane Keith, which had destroyed sea grass to the extent that small lobster disappeared.

²⁶ This was in marked difference to other case studies where fishers did not attribute the decline in the fishery to over-fishing.

On the positive side, one fisher had seen an improvement in lobster catch in Zone B, which he attributed to spill over effect from Zone A, whilst another said that generally the fishery had improved and there were definitely more fish in zones A & D. According to an HCMR progress report reported in the updated management plan (Young and Bilgre, 2000) the six fishermen who fished in the Hol Chan area before it was a reserve were asked to complete a questionnaire two years after Hol Chan received reserve status. Results from this survey and from landing records from the Caribena Co-operative, all indicated an increase in catch for lobster and conch (Young and Bilgre, 2000). The user survey also suggests that at this time perceptions of the fishers, as now, were positive. Scientific evidence for the ecological impact of the Park was presented in section 3.6.

3.9.3 Impact of the marine park on fishers' access to the fishery and hence their livelihoods

The implementation of new zoning regulations prohibited fishing in Zone A (1 square mile) and some parts of Zone D. Those who had traditionally fished in Zone B were allowed to continue to do so.

It is not clear how many fishers were affected by these regulations as many had already turned to tour guiding. In fact, as mentioned in section 3.7, it was tour guides who originally proposed that commercial fishing should be limited along the barrier reef in front of San Pedro Town though the proposal was rejected because it favoured fishing guides at the expense of commercial fishermen (Carter *et al.*, 1994). The representative from Caribena Co-operative suggested about 30 fishers (divers) were affected by the Reserve regulations. According to him and to literature sources, commercial fishers did originally resist the draft plan and only agreed after a compromise was reached by moving the boundaries of Zone A. Even then, Mascia (2000) suggests that the draft proposal had to get passed by the, then very powerful, Caribena Co-operative before it would be granted ministerial approval. This, in turn only happened once the minister had compensated the fishers' co-operative for the loss of resource use rights by approving a joint venture between the co-operative and two Honduran shrimp trawlers (Mascia, 2000).

With the combined effect of consultation and compromise, strong organisations to represent fisher's interests and the fact that many fishers were already seeking alternative livelihood options, it appears that the impact of restrictions on fishers was not that great or at least did not affect that many and therefore that the potential non-beneficial outcomes on fishers suggested in Figure 3.3 had not been realised. None of the fishers we spoke to believed that the regulations regarding restricted fishing access shouldn't exist. The fact that the majority of former fishers were no longer considered, in the stakeholder analysis, to be in the poorer socio-economic group also suggested that the impact on their livelihoods was, at the very least, not damaging.

3.9.4 Impact of tourism development on fishers

This has already been discussed in previous sections. With most fishers turning to the tourist industry there were far fewer full time fishers and those that there were had a ready market for their catch. The fishers sold all the finfish and some their lobster and conch directly to local restaurants, as the co-operative did not take finfish as they got a higher price for lobster and conch than if they sold it to the co-operative. In recent years the advantages of selling to the co-operative had lessened.

Previously the co-op could give out loans for equipment and offer other financial incentives and support. Such benefits had now all but disappeared, owing, according to the office manager, to debts of the co-operative itself. In his opinion, the only advantage of the co-operative now was that it still took conch and lobster during hurricanes and other times when tourist demand was very low.

Tourism development had therefore provided a local market for the catch of those who still fished and provided an alternative source of income for those who had left the profession. On the whole, its impact was perceived to be very beneficial.

3.9.5 Other impacts of park management on fishers

In interviews with the fishers and ex-fishers, few other impacts of HCMR were mentioned besides the fact that its establishment protected, to a certain extent, San Pedran's major tourist attraction (a positive impact) and secondly its limited but positive effect on the commercial fishery itself.

Whilst they agreed that introduction of regulations had reduced conflict between some users, new conflicts had emerged (particularly between dive guides and recreational fishing guides) and park management was not doing enough to resolve these. These conflicts did not tend to affect them specifically but conflict between users was still perceived to be a significant problem and one which caused friction within the community. There was also a general feeling that the Park management style was not as consultative as it had been in previous years, nor as transparent, which led to some feelings of mistrust amongst the fishers.

The educational role of HCMR was also not mentioned with none mentioning the HCMR's impact on environmental awareness or knowledge. Finally none were aware of any impact the Park had on environmental matters outside the protection of Zones A & D (e.g. pollution control, mangrove protection) and neither did they perceive any negative effects of tourism development.

3.10 Opinions of Park management as perceived by those working in and around the Park

Overwhelmingly amongst respondents, opinions of HCMR management centred around people's perceptions of how well the Park was protecting the 'tourist' zones of Hol Chan Marine Reserve (e.g. Hol Chan Cut and Shark Ray Alley). Whilst there were exceptions to this, they were few and far between. Little mention was made of the other zones of the Park or any other environmental or educational services that HCMR provided. This emphasis reflects the overwhelming importance placed on these areas as tourist attractions, attractions which most believed were playing a significant part in sustaining their livelihoods.

A summary of local people's perceptions of the strengths / opportunities and weaknesses / constraints of HCMR management are shown in Table 3-7 and Table 3-8 respectively. Opinions were not differentiated along user type lines with individual differences being more important than differences between user groups. Again this reflects the fact that all user groups saw the importance of HCMR to tourism.

Table 3-7 Strengths and opportunities of management perceived by those working in and around the park

Strength / opportunity	Impact	User group
Regulations regarding use of Zones A & D	Protected recreational zones for tourists Protected fishery & brought benefits to fishers	All individuals and user groups

Constraints and weaknesses directly related to the park management are summarised below.

Table 3-8 Constraints and weaknesses of management perceived by those working in and around the park

Constraint/weakness		User group
Lack of enforcement in recreational zones <ul style="list-style-type: none"> • Touching and feeding fish • Guides not instructing tourists properly • Guides not in water with tourists 	Damage to reef	Tour guides (mainly complaining of tour guides from cruise ships)
Insensitive timing and lack of consultations for fee increase. General lack of information & consultation	Breakdown in good relations	Tour Guides Hotel industry Craft vendor
Too much tourist pressure on Hol Chan	Damage to the reef	Hotelier Tour guide
Lack of wardens	Unable to enforce properly	Hotelier
Inability to enforce	Damage to area, increased conflict	Hotelier
Insufficient attention to safety <ul style="list-style-type: none"> • Safety equipment on boat • Line for tourists 	Danger for tourists	Tour guide
Over-emphasis on fee collection to the detriment of other work <ul style="list-style-type: none"> • Enforcing regulations generally • Maintaining buoys • Clearing sea based debris from hurricanes • Lack of protection of mangroves • Educating different user groups about regulations 	Lowering opinion of HCMR staff. Environmental degradation	Individuals from all user groups
Lack of transparency with regards how money was spent	Loss of trust	Tour guide

Whilst some of the constraints mentioned were not seen as issues within the control of the frontline HCMR staff (e.g. lack of wardens, safety equipment, too much

pressure on the resource) many other comments *were* perceived to be the fault of current management. This fact was not a surprise to the Park manager who had already said that it was a sensitive time and that the HCMR staff needed to invest more in community outreach.

3.11 Summary

This section is split into three parts: ecological outcomes of resource management; extent to which local communities have benefited from the Park and extent to which this has played a part in management effectiveness and ecological outcomes; and lastly, factors believed by staff to be currently affecting ability to achieve management objectives.

More than at any other case study, there was considerable evidence of positive ecological impacts of the reserve on local ecology since its establishment in 1987. Evidence of positive impacts on the fishery and on the coral reefs were particularly obvious, those on sea grass and mangroves less so (though this was more due to less information being available than to evidence of less positive outcomes). Information from discussions with fishers and tour guides correlated well with the scientific evidence showing that, at least with respect to the reefs and the fishery it set out to protect, HCMR was achieving conservation objectives and the Reserve could be said to be an ecological success.

At the same time, and possibly not coincidentally²⁷, the extent to which local communities had benefited from the reserve, through its direct impact on tourism was in stark contrast to other case studies in this report (such as Negril Marine Park, Jamaica and, in particular, Princess Alexandra Land & Sea National Park in the Turks & Caicos). Differences lay in the extent to which the Reserve itself was fundamental to the local tourist industry *and* the extent to which the local communities, as opposed to outside developers, had been able to capitalise on this. So much so that it was widely perceived that it was tourism, and the principal tourist asset, Hol Chan Marine Reserve, which had led to a rising of the standard of living of most San Pedro's away from poverty.

Here is a good example of a conservation initiative that brought substantial benefits to its local community. In some ways the simultaneous development of San Pedro and the Hol Chan Marine Reserve was unique and it is difficult to imagine how the situation could be replicated elsewhere. However it is felt that lessons can be learnt from the process through which this development was achieved.

In no other case study in this research was the MPA as important to the tourist industry as was HCMR to Ambergris Caye. The site is one of outstanding interest to snorkellers and divers due to the extraordinary variety, abundance and size of fish and marine life contained within a relatively small area. There is no doubt that these 'natural' characteristics played an important part in its overall importance, however this is not the only factor. The emergence of the HCMR was concurrent with the emergence and rise of the tourist industry. This was important, as resource conservation became integral to, and indeed a principal asset of the tourist industry, influencing the type of tourism that was encouraged. Park management both encouraged and benefited from this by playing a significant role in marketing the

²⁷ Whilst frequently researchers focus on the possible beneficial socio-economic impacts of improving/protecting the marine environment, it is also important to turn this around and appreciate the importance of providing beneficial socio-economic impacts in order to improve the chances of *being able* to improve/protect the marine environment.

Reserve as a tourist attraction. Timing and the role of the Park in developing the industry were therefore important factors.

With regards their ability to capitalise on benefits that the tourism industry brought, it was the locals themselves that drove tourism as opposed to developers from elsewhere in the country or from overseas. Of the possible reasons why this was the case, some were unique to the time/place but others were more general. They include the following: Tourism being in its infancy in Belize and there being less interest at the time from international or non-local developers; the need for the local community to diversify their livelihoods as a result of the decline in the fishing industry that had previously supported them; organisational strength and power of user associations connected with the tourism industry such as the San Pedro Tour Guide Association and the Belize Tourism Industry Association (BTIA) which appeared to protect the interests of their members well; the influence of the previously powerful fishing co-operatives who provided a good model for organisational structure and *modus operandi* on which successive associations could be based; the collaborative manner in which the HCMR emerged, with full consultation and involvement of local people that may have helped to build social capital (in terms of reducing conflict, enhancing social cohesion, bringing different stakeholders together) in a way that encouraged local initiative; and the legal requirement for tour guides to be Belizean, preventing overseas developers from bringing in their own staff. It is felt that that all of these factors, and more, could have contributed to the beneficial outcomes for local communities.

Whilst there were many aspects of the HCMR that suggested it was a good example of a Marine Park that had achieved successful ecological and socio-economic outcomes, it was not without its problems.

As with other Marine Parks, sustainable funding was a major issue though, compared with other parks, it was much further along the route of self-financing through user fee schemes. This journey had not been without its problems though, not least local opposition to an increase in fees, local criticism of an increased focus on financial rather than resource management and local concern that basing funding on the number of users could lead to over use and a deterioration in reef condition. Whilst the HCMR had emerged through a process of local collective action and common purpose, it appeared that in recent years there had been a distancing of the Park management from the community it had originally 'served'. There was less involvement of local stakeholders on decision-making committees and generally less communication between the Park management and local people. This was having a negative effect on local people's perception of Park management, something that, unchecked, could lead to a deterioration in levels of compliance with Park regulations and ultimately a deterioration in the condition of the resource itself.

3.12 List of respondents

The tables below detail all the people that were spoken to and whose opinion was sought during the field study research.

Table 3-9 Interviews with Park management and other organisations

Respondents	
HCMR staff	Individual and group interviews with all park staff Manager

Respondents	
	Wardens Administrator Peace Corps Volunteer
Green Reef	Peace Corps Volunteer
Caribena Fisher's Co-operative	Office manager
San Pedro Unemployment Office	Office manager
Hol Chan Trust members	CZMI, Belize City DOF & ex-manager, Belize City

Table 3-10 Interviews with native islanders and poorer communities working in and around the Park

User group	Interview
Fishers	2 interviews with 5 fishers (including only 1 fulltime fisher)
Craft Vendors	3 interviews with 5 vendors
Watersports operators Employees of dive operations	3 interviews with 5 guides
Hotel Staff	1 interview with manager of family run hotel 2 interviews with 4 staff members

3.13 References used during case study research

Alamilla, M. (2001) *Hol Chan Marine Reserve 2001 Yearly Report*. Department of Fisheries, Belize City.

Alamilla, M., Badillo, E. *et al.* (2000) *Hol Chan Marine Reserve, Ambergris Caye, San Pedro*. Leaflet funded by the IUCN/ORMA Small Grant Programme

Anon (2002) *San Pedro Unemployment Report*. Unemployment Office, San Pedro

Gordon, E.T. (1983) The impact of the co-operative on the emergence of the lobster industry in San Pedro, Belize. *Belcast Journal of Belizean Affairs* 3 (1-2): 15-30

Carter, J., Gibson, J., Carr, A. and Azueta, J. (1994) Creation of the Hol Chan Marine Reserve in Belize: A Grass Roots Approach to Barrier Reef Conservation, *The Environmental Professional*: 220–229

Cummings, A. R. (2002) *An assessment of the ecological impacts of two successfully implemented Marine Protected Areas in Belize*. Draft MSc Thesis. University of the West Indies, Cave Hill, Barbados.

Geoghegan, T., Smith, A., Thacker, K. (2001) Characterisation of Caribbean Marine Protected Areas: an analysis of ecological, organisational, and socio-economic factors. CANARI Technical Report No. 287. July 2001 Prepared for DFID NRSP LWI Project R7976.

IUCN (1997) "Imperatives for protected areas statement" adopted by the *IUCN/World Commission on Protected Areas (WCPA) Symposium on "protected areas in the 21st century: from islands to networks"*. 24-29 November 1997, Albany, Australia. Posted on www.iucn.org/themes/wcpa/imperatives.pdf

Mascia, M. (2000) *Institutional Emergence, Evolution and Performance in Complex Common Pool Resource Systems: Marine Protected Areas in the Wider Caribbean*. PhD Thesis, Duke University, USA.

McField, M. (2000) *Evaluation of management effectiveness: Belize Marine Protected Areas system*. Florida, University of South Florida

McField, M. (2001) *Impact of Disturbances and Management on Coral Reef Community Structure in Belize*, PhD thesis. University of Miami, USA.

Richards, R. (2002) A Review of National Policy and Legislation contributing to, or constraining successful Marine Protected Areas implementation in Belize and Jamaica. Draft MSc Thesis. University of the West Indies, Cave Hill, Barbados.

Roberts, C.M. and Hawkins, J.P. (2000) *Fully-protected Reserves: A Guide*. WWF Endangered Seas Campaign. Washington DC, USA.

Sedberry, R.G., Carter, H.J. and Barrick, P.A. (1994) A comparison of fish communities between protected and unprotected areas of the Belize Reef ecosystem: implications for conservation and management. Peer Review section. *Proceedings of the 45th Gulf and Caribbean Fisheries Institute* 45: 95-127.

Young, E.R. and Bilgre, B. (2000) *Hol Chan Marine Reserve Management Plan (updated)*. Fisheries Department, Belize City, Belize.

Various leaflets/manuals produced by HCMR and Green Reef, San Pedro, Belize.
Newspaper articles