DFID NRSP PROJECT R7976

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

Appendix 5 –
Case Study of Negril Marine Park, Jamaica

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 5 – case study of Negril Marine Park, Jamaica. 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.

Project reports are posted (pdf versions) on the MRAG website www.mragltd.com (select "Land Water Interface" from left hand column, then "Selected Project Examples" and refer to the MPA project section).

Table of Contents

List of Figures

List of Tables

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

5 Negril Marine Park - Jamaica

The following information represents the results of field research undertaken in Negril Marine Park (NMP) in February/March 2002. Only results are presented here. The rationale for the work and research methodology can be found in Appendix 1 of this report. Negril is one of four case studies investigated, the others forming other appendices in this report.

Details of the main contributors of information in this results section are mentioned in text where relevant and a list of interviews presented in section 5.13. As will be seen in section 5.13, 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 information[1] 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.

5.1 History of park and management

Table 5-1 shows the major events in the history of Negril Marine Park as seen by current staff of the Negril Coral Reef Preservation Society (NCRPS), the organisation with *de facto* responsibility for the day-to-day management of the marine park. This table was a result of round table discussion with five of the nine current members of staff. All had been working there since at least 1995, and two since 1991.

Whilst Richards (2002) states that the NCRPS started in 1989, according to staff nothing essentially happened until 1991 when reef moorings were put in place to stop the anchoring of dive-boats and glass bottomed boats, at the time one of its primary concerns[2]. The NCRPS (originally a group of local scuba divers and dive operators) held its first annual workshop in 1992, an event which continues to this day. These workshops are attended by members from different parts of the local community (NGO's, government, local stakeholders from tourism and fishing industry) with the programme of the workshop being based on the activities that NCRPS will undertake in the following year. It was at the third of these annual events that the focus centred around the need to establish a conservation area that would "guide land use, establish public parks on land and sea, and manage the preservation of Negril's natural resources". (Richards, 2002 p.138). One result of this was the establishment of the Negril Environmental Protection Trust (NEPT) in 1994. The original thinking behind NEPT, an NGO, was that it would be an umbrella organisation that would provide co-ordination and facilitation between local government bodies, community groups and business – a kind of environmental management council with a co-ordinating role.

1995 was an important year in the history of the MPA as two major events happened. Firstly, a watershed environmental protection plan was drawn up by NEPT and

[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.

[2] Reasons for the establishment of the NCRPS and a detailed general history of the events surrounding the establishment of the MPA can be found in Richards (2002).

NCRPS that demonstrated consensus for the creation of an MPA. Secondly, NCRPS received funding from the European Union (EU) for the establishment of a marine park structure. This enabled the NCRPS to set up headquarters, employ staff and begin many of the activities that were still in place at the time of research in 2002. In 1997 and 1998 there were a series of legal declarations that, whilst perceived to have little impact on the day to day operations of park staff, were vital to the long term sustainability of it.

Table 5-1 Timeline showing history of the NCRPS and NMP as perceived by NCRPS staff

Date	Activity
1991	• Establishment of NCRPS • Reef moorings – stop anchoring of dive boats/glass bottomed
1992	• 1st annual NCRPS workshop
1993	
1994	• NEPT established
1995	• Preparation of watershed based environmental protection plan • Funding from EU for establishment of Marine Park Structure (until 1998) • Start of Junior Ranger Education Programme • Swimmers lane in place in Long Bay • Rangers started (4 of them) • Stakeholder meetings started
1996	• Obtained boat and truck • Beach erosion study started (continued till 2000)
1997	• EPA declared • Laboratory for water quality analysis started • Management plan for NMP written
1998	• Negril Marine Park declared
1999	• Start of 2nd EU project – financial sustainability of NCRPS & NEPT
2000	• Zoning of fish sanctuary (Orange Bay/ Bloody Bay/ Homer's Cove). Six planned. Three yet to be implemented. • Reef Check started (annual event)
2001	• User fee consultation • NEPA approved that user fees would be collected from park • AGRRA (every 5 years)
2002	• EU funding finishing • Legal responsibility to manage park given to NCRPS.

In 1999, there was a second EU project that provided core funding (until 2002) with one of its primary objectives being to move towards the financial sustainability of NCRPS and NEPT[3]. One idea still current was the concept of establishing a user fee system. This had started as early as 1996 and consultations with local stakeholder communities were carried out in 2001 in Negril and Kingston and involved the Caribbean Natural Resources Institute (CANARI). Since then, progress had been slow and, at the time of this research, no agreement had been reached on how it

[3] NMP gets very little support from the Jamaican Government (what they do get comes via revenue collected from beach licenses) and with no user fee system in place it gets the majority of its funding from international agencies with the EU providing core funding. Other help has come from sources such as the Environmental Foundation of Jamaica (EFJ), NCRPS membership subscriptions, fundraising activities and souvenir sales (Richards, 2002).

could be implemented. Other events that the marine park staff saw as important developments were:

- The establishment of fish sanctuaries that were self enforced by fishers in several places within the Park; and
- The development of technical capability for data collection (e.g. laboratory for water quality monitoring, Reef Check, AGRRA, beach erosion study).

They also highlighted some developments that had had less of a positive impact. Firstly, the imminent end of EU core funding had meant that some of their core activities (Junior ranger programme, stakeholder meetings regarding zonation plans) had been reduced down and more focus had been placed on fundraising attempts. Secondly, there had been changes in personnel (for example, since 1999, NEPT had been through 4 changes of executive director) and this had disrupted activities and affected morale. Table 5-2 shows how NCRPS staff perceived effort put into their core activities had changed since the organisation emerged. The staff chose what they considered to be, collectively, the six most important operational duties. Each duty was then scored in each time period with a maximum of 6 (maximum effort) and minimum of 0 (no effort).

In the early years (1991-1994), effort was only put into a few activities (mooring installation and consultation meetings) but staff still gave these activities maximum marks getting no higher even when more staff were taken on in 1995. As can be seen, with the exception of water quality monitoring, the staff perceived there had been a drop off since 1998 (in some cases quite a substantial drop off) in the activities that they regarded as important.

Table 5-2 Trend matrix of major activities of NCRPS staff

	1991 – 1994	1995 – 1998	1999 – 2002
Patrolling	0	5	4
Coral Reef Monitoring	0	6	4
Water Quality Monitoring	0	6	6
Junior Rangers Programme	0	6	4
Mooring installation	6	6	3
Workshops / consultation meetings	6	6	3

According to staff, patrolling had decreased due to lack of funds with the need to minimise gas consumption reducing time spent out. Scientific monitoring had also increased and, with no additional staff to undertake it, counteracted patrolling time. Coral reef monitoring was high in 1995-8 due to the requirement for baseline studies for the first management plan.

In the 1995-1998 period there were about 50-55 members in the Junior Ranger's Programme but current numbers were 20-25. This was primarily due to decreased resources but a shift in priorities was also an issue as, at J$700,000 per year, the costs to run the programme were low compared with salaries and fuel.

Moorings installation and maintenance had reduced as there were no new buoys to install but the staff felt strongly that, whilst effort put into meetings and stakeholder consultations need not be as great now as in the early years, it should be higher than it currently was as there were still many issues to be discussed, they recommended an 'ideal' scoring of five.

The next section deals with the current management practices, leading in to the perceived constraints and opportunities of current operations as perceived by those within the organisation (some of which have been touched on in this section). For more details on the history of the NMP in particular, and Jamaican national policies and legislation affecting Jamaican Marine Parks generally, see Richards (2002).

5.2 Current management practices and park activities

5.2.1 Activities within the marine park

Figure 5.1 shows a map of the Marine Park and its different zones[4]. The park is 16,000ha including areas of coral reef, sea grass and mangrove ecosystems as well as fish nursery areas and beaches.

Being in a prime tourist area, activities occurring in the park, besides those of staff, included:

- Fishing
- Snorkelling
- Diving
- Parasailing
- Jet skiing
- Water skiing
- Glass bottom boat trips
- Banana boat
- Windsurfing
- Sailing
- Cruises
- Beach recreation

[4] At the time of this research (02/02) the fishing zones are still the subject of much disagreement between fishers and the park and they were not strictly enforced.

Figure 5.1 Map of NMP showing zones (taken from O'Sullivan, 2002[5])

[5] This map was taken from O'Sullivan (2002) and, additionally, shows the ecological survey sites (Cousin's Cove and Top Sandy Cay) discussed in her MSc Thesis and referred to in Section 5.6.

5.2.2 Current activities of marine park staff

At the time, there were nine marine park staff members who explained the activities they were involved in (outlined in Table 5-3). These activities can be related to the different Programmes outlined in the management plan, also presented in the table.

Table 5-3 Current or recent activities of Marine Park staff

Management Programme	Specific activities
Zoning Programme	• [3] Enforcement of some aspects of zoning plan • [3] Development and enforcement of fish sanctuaries
Education Programme	• [4] Junior ranger programme • Teacher training programme • Educational tours (college groups) • Resource centre (information exchange)
Public Relations programme	• Annual NCRPS workshops • Provision of information and advice to public • [3,4] Workshops/consultations/meetings • National & international campaigns
Lobbying Programme	• Comment on government user fee system • [1] Comment on local developments and threats to park (e.g. Cable Company cable erection, restaurant development at Booby Cay, RIU hotel development)
Sustainable Community Development Programme	• Irish moss culture project • NEPT organic farmers project
Enforcement Programme	• [3] Patrolling * • [3] Educative enforcement of park regulations • Life guard training • Liaison with marine police
Visitor management and zoning programme	• Some activities in the education and public relation categories
Research and monitoring programme	• [3] Coral reef (benthic) & sediment monitoring • [3] Water quality monitoring (freshwater)
Resource management programme	• Fisheries management plan not yet in existence but a priority of current manager • Supporting the fisheries co-operative • Mesh exchange programme (not yet online but imminent) • Wildlife rescue
Disaster & emergency management programme	
Administration programme	• [2] Running office (e.g. accounting procedures, office procedures, staff meetings, office supplies)
Financial Sustainability Programme	• [1],[4] Fundraising and writing proposals (e.g. UNEP small grants fund - equipment/glassware for water quality; Canada/Jamaican Green Fund - Zoning of Marine Park, pumps, hydraulic systems, buoys; EFJ Project - building NCRPS capacity to implement user fee programme • Saving money

There was overlap in the programmes, and activities were often relevant to more than one programme. In the table above the activity is put under the programme to which it was most related. For details of the management plan see Otuokon (1997). It should be noted that not all activities carried out by the Park are necessarily presented here, only those deemed important by staff or brought up in discussions with them. Certain activities were also partially carried out by NCRPS board members, such as the lobbying programme and financial sustainability programme. Some of these activities are discussed in more detail below. The superscript numbers represent the following:

[1] Activity taking up substantial amount of manager's time
[2] Activity taking up substantial amount of administrative staff time
[3] Activity taking up substantial amount of wardens' time
[4] Activity taking up substantial amount of education officer's time

5.2.2.1 Workshops, consultations and meetings

Workshops, consultations and meetings, whilst having dropped off over recent years, were still seen as a priority to the wardens and the education officer, who also believed they should be stepped up again. They believed participation of different stakeholders and groups had built the NCRPS, and was integral to continued sustainability of the park. One example they gave was that if community involvement had been higher with more community liaison, then there would have been more support (with NCRPS) against the hotel construction proposed at Bloody Bay.

They felt that participation and reaching consensus was a long process but, as the NCRPS was internal to the area, it had all the necessary time to repeat processes when necessary. Dealing with disagreement was hard work but staff believed they had built up skills in reaching compromises/consensus. The main example given for this was compromise with regulations regarding fishing in the park. The national law in place for marine parks was very restrictive regarding fishing practices, but Negril was originally a fishing village so these rules would never have been accepted/enforceable. Instead, planning with fishermen, dive operators and hotels, they did the following;

- Designated fisher zones within the Park[6]; and
- Allowed spear fishing in some areas, gradually expecting activity to decrease through education and continued discussion with fishers[7]

Whilst widely perceived to be the correct and only practicable approach, Katy Thacker, instrumental in setting up the Park, has suggested that perhaps too many compromises had been made. In a recent paper she wrote, "because of the respect of traditional use and the known effect that restriction would have on tourism, not many sacrifices have been made. Perhaps too many leniencies have been allowed as the resource has suffered greatly and now we are at risk of losing the pristine quality that tourism is based upon and fishing depends" (Thacker, 2002 p.11). In the same paper more serious and effective enforcement methods are recommended (as

[6] Despite this, to date there is still disagreement between the Marine Park and fishers regarding the designated fishing zones and, except in specific areas, these zones are not strictly enforced.
[7] In justification of this, wardens cited an example in Montego Bay Marine Park where traditional spear fishing was prohibited and as a result wardens' boats were smashed and their lives threatened.

much, if not more so, for tourism development as for fishing), the subject of the next section.

5.2.2.2 Patrolling and enforcement

The participatory approach to planning had also influenced the approach taken towards enforcement where wardens tended to take an educative approach and encourage voluntary compliance. There were also other reasons for this. Firstly, wardens were unwilling to put themselves at serious risk. Secondly, as pointed out by Richards (2002), whilst wardens were authorised with powers of detention, the NCRPS at the time of this research still did not have legal authority to manage the park and this "is a serious loophole when it comes to prosecuting violations" (Richards, 2002 p.150). This lack of authorisation meant that the marine police had to be involved when arresting offenders[8].

In fact, according to the research of Richards, there had been few cases prosecuted, with an average of only one per year. This was due partly to the above but also, Richards suggests, was a result of Magistrates not understanding the importance of environmental regulations and throwing cases out of court. This was further compounded by the fact that, even when cases were tried, this lack of understanding also gave rise to the minimum penalties being imposed (Richards, 2002).

5.2.2.3 The Junior Ranger programme

The Park worked in 12 schools in the Environmental Protection Area (EPA). There were three levels – basic, advanced and speciality (starting at age ten) and the programmes involved workshops and practicals, most of which were carried out by the education officer herself but sometimes specialists were brought in. There was an environmental club in each school and junior rangers were the leaders of the clubs. As well as these programmes, they had additional activities and competitions such as the 'best kept and green school competition' (lights, water, cleanliness, separate rubbish, environmental awareness), the winner of which was announced on Earth Day.

Funding for the education programme came from several sources (EFJ, Canadian Green Fund, EU project) but each year funding for the programme was an issue. There was a huge demand for courses but, for example, advanced courses were rarely run due to funding constraints. As well as activities for children, the Park had also been involved in helping others develop manuals for teachers and also in teacher training.

5.2.2.4 Fish sanctuaries and mesh exchanges

Whilst there was still much argument with fishers concerning the fishing zones within the Park, a recent successful activity had been the implementation of fish sanctuaries at Little Bay, Orange Bay and Bloody Bay (see also section 5.7 for more details). These sanctuaries, in fish nursery areas, were a result of prolonged discussion with fishers in these areas. Compliance with regulations (no fishing) was high with the fishers enforcing the regulations themselves. As will be seen in later sections, fishers perceived that it was in their interest to do so. Another successful development had

[8] This situation changed on 9th October 2002 when the NCRPS were given the legal right to manage the Marine Park.

been some fishers' voluntary switch to larger mesh sizes as a result of continued dialogue with park staff. The Park hoped to continue this with the Mesh Exchange Programme, which had been tried elsewhere in Jamaica with some success[9]. Elsewhere, fishermen had started seeing the difference – less fish but bigger fish and Park staff anticipated that it would be a gradual process of acceptance in the Negril Marine Park area.

The Fishers Co-operative

As part of the management plan, it was stated that support should be give to the Fisheries Co-operative in their efforts to develop a fishermen's village in Negril town that would incorporate several projects to assist fishermen providing additional jobs or income generating opportunities (e.g. inland fisheries, boat building, canal tour guides). In fact, Park staff stated that, despite their own efforts, and in particular those of NEPT, the co-operative was not functional and they attributed this to internal arguments and personality clashes. The co-operative had originally missed the opportunity of funding for the fishing village because they couldn't procure land but now they had the opportunity again so things might happen. NCRPS would have liked them to be involved in the development of a fisheries management plan but this was currently impossible due to their lack of organisation. The manager stated that at that time the Park had no real links with the co-operative besides attending a few of meetings regarding the fishing village.

5.2.2.5 Current Priorities

When asked, the current manager of the Park saw the following as the current priorities:

- Keeping pressure on the government for the delegation instrument to establish the NCRPS' legal authority to manage Marine Park (since granted).
- Having a user fee system in place – also a government dependant activity[10].
- Developing a Fisheries Management Plan and assessing impact of management.

5.2.3 Role and function of NCRPS Board and linkages with NEPT

5.2.3.1 The NCRPS Board

At the time of the research there were approximately 100 NCRPS members from around the world and the board comprised 23 members. Membership of the Board was voluntary (though some got their expenses paid). The board met monthly and it was made up of i*ndividuals* rather than *organisations* in the sense that although they had people from a wide range of backgrounds (and people were usually selected with this in mind), the individuals did not *represent* their respective employees/ employers or user associations.

At the time of the research, the members of the board included:

[9] The principle behind the programme was that the Park bought wire of larger mesh size and exchanged this with the fishermen, giving as much as double the wire as they had received.
[10] This seemed to be moving faster than previously. It was due to start with some users (snorkellers, divers, mooring users). Also decided to reduce fee initially as a lot of opposition from all people, particularly watersports. Collection would be ticketing/permits from office. Paid back by dive shops on monthly basis. Wardens would check tags.

- Fishermen (3, including leader of Negril fishers co-operative)
- Watersports operators (6)
- Craft Vendor (1)
- Private businessmen (2) with the Chamber of Commerce.
- Graphic designer (1)
- Member of NEPT (1)
- Private individuals from community (e.g. game warden, sugar factory worker, school teacher, environmentalist)

How board members were selected is detailed in the Amended Articles of Association for NCRSP Ltd. In brief, members were nominated and selected by the board themselves at their AGM.

In day to day terms, the board was mainly concerned with lobbying and what their responses should be to various types of activities that were going on within the EPA. These responses were then communicated to the relevant organisations and authorities generally via the Marine Park Manager. They also provided guidelines, support and decision-making for the marine park.

5.2.3.2 NEPT and linkages with NCRPS

Unlike the NCRPS, NEPT consisted of organisations not individuals (e.g. Urban Development Corporation (UDC), National Water Commission, NCRPS, Chamber of Commerce, Planning Authority). From discussions with MPA staff and members of the NCRPS Board, linkages with NEPT were not as strong as they had once been to the detriment of the EPA as a whole. Several reasons were suggested for this, including the following;

- High turnover in staff (particularly Directors) at NEPT;
- Personality conflicts;
- Initial dual funding of the two organisations (EU project), lack of clarity of funding routes and need for accountability; and
- Loss of Katy Thacker who had been the Executive Director of both NGO's, so instrumental in information exchange and co-ordination.

These linkages were seen as important not only because what happened on the land part of the EPA affected the Marine Park and so action had to be co-ordinated, but also because the two organisations shared information, resources and expertise.

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

In this section, positive and negative attributes of management are those cited by the Marine Park staff themselves or members of the NCRPS Board. Those perceived by members of the local community are presented in section 5.11 with both being summarised in section 5.12.

5.3.1 Strengths and/or opportunities recognised by marine park staff and members of the NCRPS

Throughout interviews it became obvious that the principal strength of the Marine Park, as perceived by those involved in management, was the focus on education and community participation as a means to develop effective management

strategies. Throughout the history of the Park, extensive effort had been put into community consultations, workshops, feedback sessions and informal discussions to encourage the possibility of agreement with management rules and regulations *before* they were implemented. The staff felt that, as a result of this, they also had the respect of much of the community and this was a significant opportunity for the hard decisions to come in the future. Amongst other things, staff believed that this approach was crucial in realising the following objectives/activities:

- Establishment of appropriate zoning system
- Respect for wardens
- Overall good levels of compliance within the Marine Park
- Respect for fish sanctuaries
- Reduction in seine net fishing and spear fishing in fishing zone
- Noticeable increase in environmental awareness
- Community involvement in coastal clean up

Several also noted that the approach was the inspiration of the first park manager, Katy Thacker, who had "strength and vision" and without whom the results would not have been achieved. This had also, in some opinions, created a tight-knit, well-trained and motivated staff, another recognised strength of the Park.

Finally, introduction of the Park User Fee system was seen as the principal opportunity for the future as, as will be seen in the next section, lack of funds and funding uncertainty were currently seen as fundamental constraints.

5.3.2 Weaknesses and/or constraints recognised by marine park staff and members of the NCRPS

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 it was held at least partially, if not fully, responsible for, are listed in Table 5-4. 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 5-4.

Table 5-4 Constraints perceived by Park staff and NCRPS Board members

Constraint	Some of problems caused
Lack of close linkages with NEPT[11]	• Reduction in community participation initiatives • Reduction in availability of human resources and information
Slow response and lack of commitment of government	• Delay in handing over legal authority to manage the Park[12] • Delay in establishing a user fee system • Eight year gap between lobbying for a protected area and it being mandated

[11] For possible cases of this, see section 5.2.3.2.
[12] This changed as of October 2002 when legal authority was finally handed over.

Constraint	Some of problems caused
Lack of funding Uncertain funding	• Lack of scientific officer and reef and fishery studies (therefore data on impact of management) • Insufficient patrolling and enforcement staff • Reduction in levels of communication with local community • Reduced education programme • Change in job descriptions
Lack of legal authority to manage the Park[13]	• Problems with enforcing regulations
Poor enforcement by others of rules regarding tourist development • Fines too small • Cases not prosecuted • Lack of support from higher agencies	• Unchecked tourism development • Sewage pollution • General continued environmental degradation
Reduction in levels of communication with local community	• Loss of momentum on putting in place zoning plan • Reduced motivation of staff members • Lack of support for protesting about environmentally damaging tourist development
Personality clashes	• Reduction in linkages with NEPT • Reduced capacity of Fisher Co-operative
Over respect for traditional use and leniency with enforcement	• General continued environmental degradation

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

Little literature was available to enable us to build up a picture of the extent of poverty and livelihood options for poorer groups living in and around Negril Marine Park. At the time of the case study research, the only literature available was a socio-economic assessment of the whole EPA area commissioned by NEPT (CARECO, 2001). Some results from this report are presented below. In addition to this, the full complement of NCRPS 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' and their relative socio-economic status. Results of this activity are also presented below. Table 5-5 shows the percentage of households considered to be in poverty[14] in the two Parishes in which the Marine Park was situated (there were 14 Parishes in all Jamaica). As can be seen, Westmoreland was the second poorest Parish in the whole of Jamaica and, whilst Hanover had improved dramatically, it was still in the bottom 50%. Given the incidence of poverty in the region, investigating the Marine Park with respect to the impact it had on poorer groups was seen as highly relevant.

[13] This changed as of October 2002 when legal authority was finally handed over.

[14] Poverty indicators used in this assessment were the same as those use by PIOJ in the Poverty Map of Jamaica. They included items such as water supply, toilet facilities, education, and unemployment but for more details see CARECO 2001 p.4.

Table 5-5 % distribution of households in poverty (CARECO 2001)

	1992	1998
Hanover	52.4% (worst)	13.3% (6th worst)
Westmoreland	51.7% (2nd worst)	33.3 (2nd worst)
Trelawney (best in 1992)	15.4	18.3

According to their assessment, CARECO found that unemployment (both youth and adult) in the EPA was extremely high. Sixty two percent were reported to be currently unemployed and 69% reported that other members of their family were unemployed. According to the 1998 Jamaica Survey of Living conditions (quoted in CARECO 2001), "skilled agriculture and fishing were the main occupations of most of the poor in Jamaica followed by craft related trades". In the whole EPA area, CARECO's assessment found that main occupations were farming (31%), tourism industry (20%), retail (10%) and "other", presumably including fishing (34%). Jobs in the tourism industry were mainly chefs, waiters and cleaning staff.

Much of this information was supported, qualitatively, by information given by the NMP staff. Table 5-6 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 the main indicators of poverty and/or wealth were. 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 groups[15]. 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 table[16]).

Table 5-6 Wealth assessment of Negril Marine Park community

Poorer (bottom 30%)	Wealthier (top 70%)
Assets + or -	***Assets + or -***
- No education	+ Business
+ Equipment (boat etc)	+ Land
+ House	+ Vehicles
+ Livestock	+ Houses
Skills (S), Opportunities (O), Constraints (C)	***Skills (S), Opportunities (O), Constraints (C)***
C Poor financial management	C Competition
C Bureaucracy	C Bureaucracy
C Lack of training opportunities	S Management skill
C Lack of diversity	O Cheap labour force
C Job unavailability	O Tourism
C lack of education and other assets	O Higher education
S Ability to farm	
S Creativity	
S Ability to fish	
O Tourism	

[15] Surprisingly construction workers were not identified in the table anywhere and this is probably an omission.

[16] Whilst it was hoped that we would be able to interview individuals and/or groups from all these stakeholder groups, time constraints meant that hotel staff were not interviewed and there was only one interview with a farmer.

Poorer (bottom 30%)	Wealthier (top 70%)
O Land (squatters)	
Jobs/ Livelihood options	***Jobs/ Livelihood options***
*Fishermen ****	Employment providers (hoteliers, restaurants) **
*Employees of large watersport operators (hotels) ****	Proprietors
*Small watersport operators ****	Investment
*Small farmers ***	Farmsteaders*
*Craft vendors **	
Hustlers *	
*Hotel staff (all inclusive) – gardeners, waitresses **	
Unemployed*	

According to the NMP staff, whilst poorer groups in general wouldn't have had many assets, and low or no education, it was generally believed that they did have houses, livestock and maybe some other productive assets. Whilst they had many constraints, some opportunities were also recognised, tourism being one of the main ones. However, staff did comment that bureaucracy was a major constraint with respect to access to the tourism industry (as was lack of access to finance), as to set up a small tourism venture required obtaining a lot of licenses which was a difficult process (e.g. glass bottom boat operators needed a beach license, tourism license, lifeguard certification and insurance). This was one reason why being employed by the larger hotels was a more common livelihood option. In its favour, Jamaica did have a minimum wage (J$1800 for a 40hr week) to protect its workers.

Staff also made the point that Negril was a hotspot for the cocaine trade and it was mixed in with the resorts. The market existed for tourists and Jamaicans alike and both poorer and richer groups could benefit from the trade in terms of livelihood but, in their opinion, people from poorer sectors often became addicts and this had a spiralling effect on crime.

Finally, as anticipated, fishing (along with farming) was regarded as an occupation of the poor with all types of fisher being put in the poorer group. Staff recognised that there was potential for the park to have a negative impact on this group (particularly in the short term) and this would increase in the near future as fishing zones were put in place. Importantly, the staff also explained that the unemployed often "turned to the sea" to support their livelihoods, particularly with the traditional practice of spear fishing (banned in Marine Parks under Jamaican Law).

5.5 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 potential beneficial and non-beneficial impacts on poorer communities. These are outlined in Figure 5.2 and Figure 5.3 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 these are discussed in the remaining sections of this appendix.

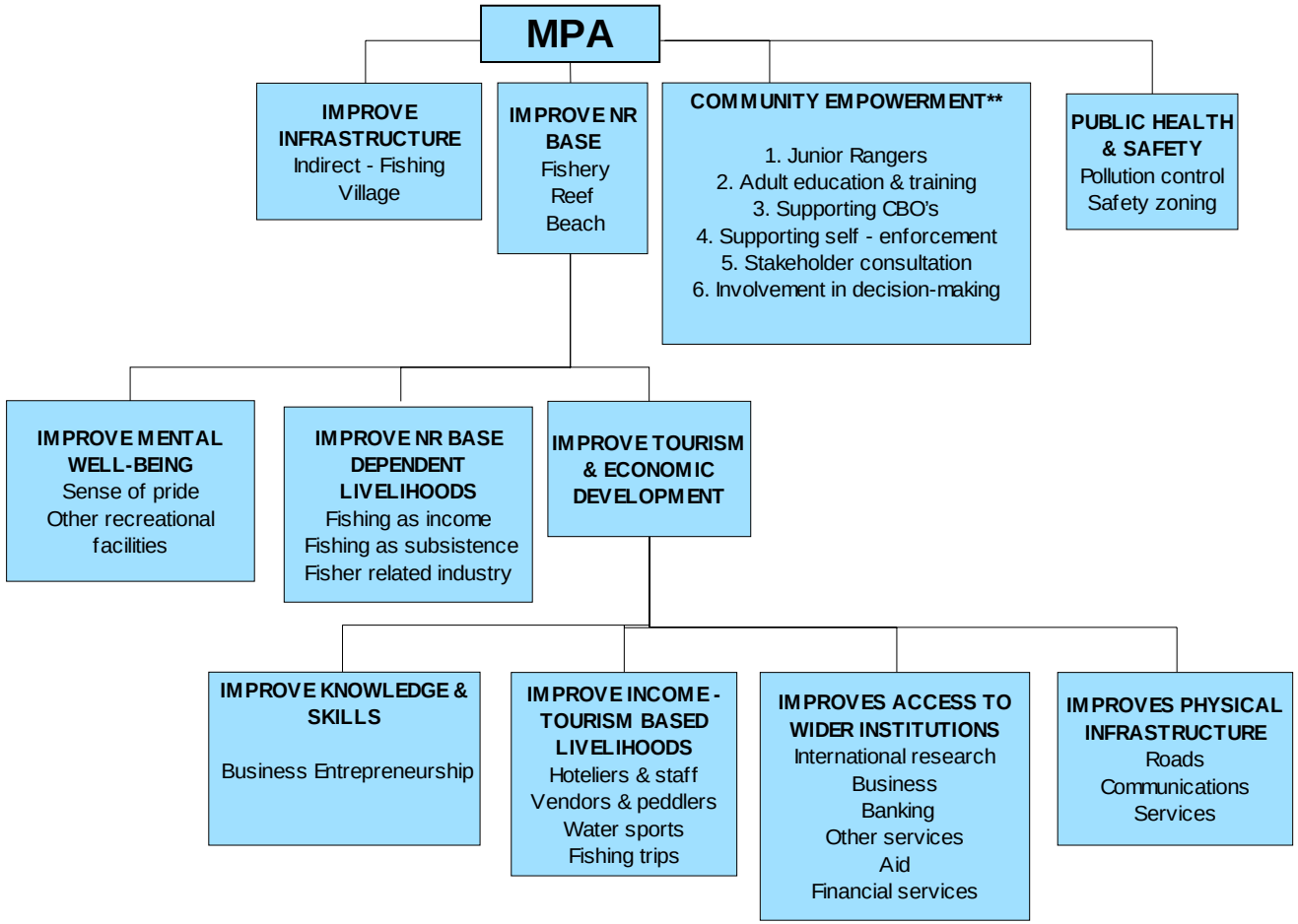

Figure 5.2 Potential beneficial impacts of NMP management and services ([17])**

[17] Empowerment, as meant here, is concerned with capacity building of individuals and the community in order for them to have greater social awareness, to gain greater autonomy over decision-making, or to establish a balance in community power relations. Used here, it covers a range of issues including the

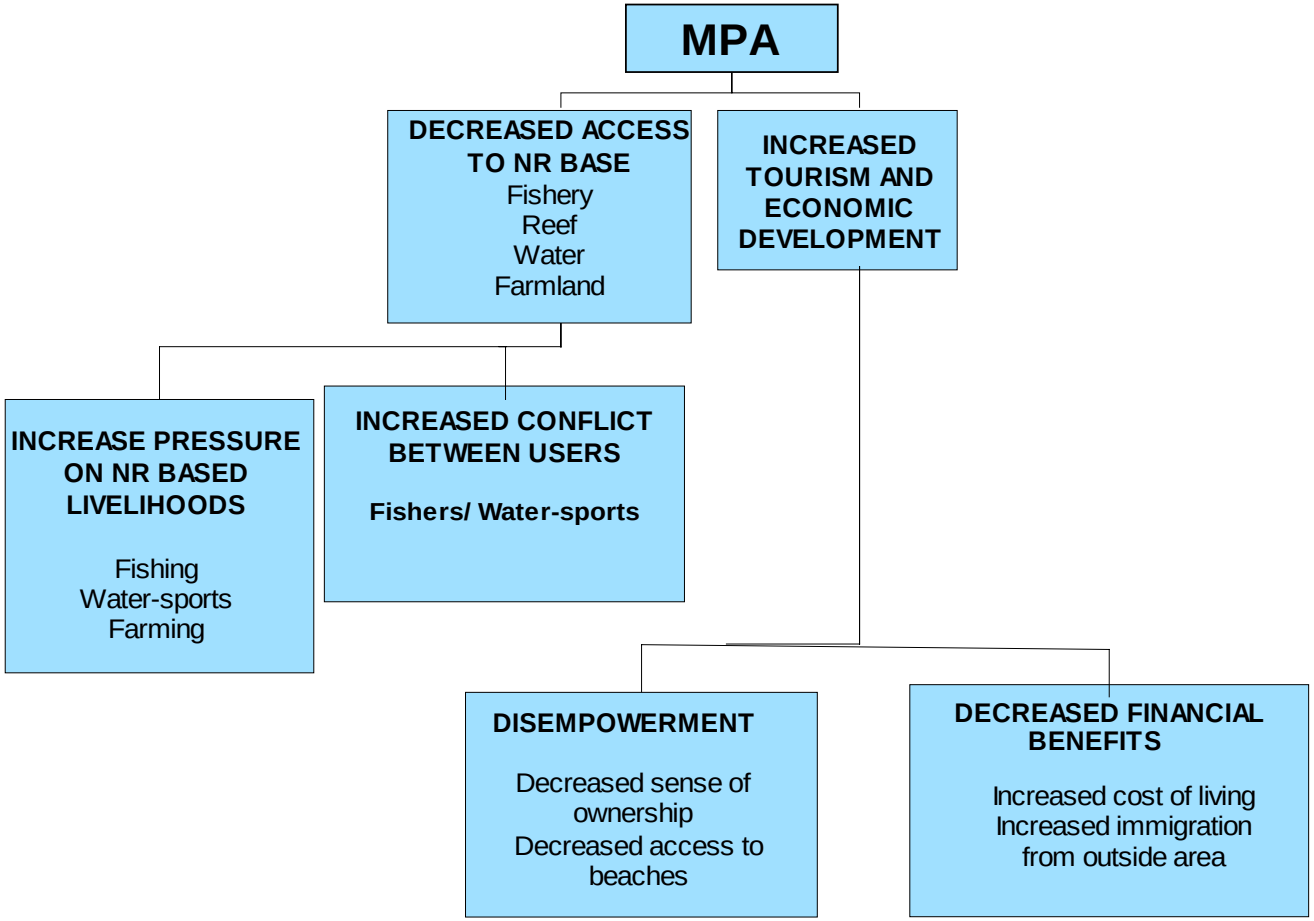

Figure 5.3 Potential non-beneficial impacts of NMP management and services

following; community access to information and services, community participation, consciousness raising, business and enterprise management skills, reducing conflicts, and gaining control over the utilisation and management of coastal resources

5.6 Ecological impact of NMP on reef and fishery

The Negril Marine Park extends across a range of ecosystems and coastal resources including coral reefs, seagrass beds, mangroves and other fish nursery areas and beaches (NEPT *et al.*, 1997; NRCA, 2000). In general, the expansion of tourism, agriculture, logging and fishing has been found to be placing pressure on the environment within NMP boundaries (CARECO, 2001). Ongoing construction and tourism development and associated problems of eutrophication and sedimentation have affected improvement of ecosystems through NMP management (O'Sullivan, 2002). Biological resources have not been regularly monitored since the establishment of NMP and there has been no systematic assessment of impacts of the Park on the marine resources. Therefore, ecological impacts are based on a variety of scientific and grey literature and have drawn heavily from research arising from the current project (O'Sullivan, 2002).

5.6.1 Fishery

The NCRPS (2000) reported that fish stocks had declined dramatically in their State of Negril's Reefs Report, Year 2000. The level of fish abundance in NMP was also found to be very low with few large fish (Otuokon, 1997) although data source was unclear. Results of surveys undertaken in 2001 showed that the commercially important species in and adjacent to NMP were primarily parrot fishes (Scaridae) and sizes were very small (0-10cm) (O'Sullivan, 2002). These results and the lack of other commercial species was attributed to the state of overfishing that is generally accepted on Jamaican reefs (Polunin and Williams, 1999; Klomp, 2000). However, it is worth noting that there is an absence of long term data and the decline in fishery has therefore not been well documented. In the absence of data, it is possible that the fishery has not declined as significantly as suggested by current low abundance as Goreau (1960) had already noted the absence of large fish and suggested that the reef would not be a good place for commercial fishing due to low number of fish traps in the area.

Results from 2001 surveys (O'Sullivan, 2002) have shown significant differences between a protected site (Top Sandy Cay) and unprotected site (Cousin's Cove) outside NMP (refer to Figure 5.1 for site locations). Higher percentages of hard coral, turf algae, rugosity and families Grammatidae and Serranidae at the unprotected site indicated that the unprotected site was healthier than the protected site which had greater percentages of soft coral, macroalgae, sand, rock, the family Mullidae and urchin *Tripneustes ventricosus.* The high cover of turf- and macroalgae at both survey sites in 2001 (O'Sullivan, 2002) may have been caused by decreased predation of the algae and hence an indicator of a declining fish population at both sites.

Management measures undertaken by NMP will continue to have a positive effect on the fishery. Fisheries management, particularly education by NCRPS, within NMP has resulted in many fishers changing to wire mesh of 3.82cm and a significant reduction of fishing in nursery grounds within bays and mangrove areas (Otuokon, 1997). More recently, fishers agreed to self-enforce zonation of important nursery grounds of Orange Bay and Little Bay (Thacker, 2002). It was also reported that education by NCRPS has meant that fishers have stopped putting pots on coral reef (Thacker, 2002).

5.6.2 Coral reef

It was widely reported that the coral reefs have been deteriorating in NMP and Lapointe and Thacker (2002) stated that corals have been replaced by macroalgae on reefs in NMP during the past decade. NCRPS water quality monitoring data (1997-2000) has shown increased nutrient concentrations in South Negril river (Lapointe and Thacker, 2002) and this has been attributed, in large part, to discharge of partially treated sewage effluent and use of fertilisers. The resultant discharge of increased nutrients was affecting eco-system health, in particular coral reefs of NMP (NCRPS, 2000). Indicators of eutrophication were the heavy bleaching episodes of coral reefs in NMP and bleaching of large amounts of pencil corals (*Mirabilis mirabili*) in 1995 which were still covered with nuisance algae (NCRPS, 2000). Another indication of high nutrient load was algal growth and significant increases in chlorophyll α values (Lapointe and Thacker, 2002). In 1994, Goreau reported that the reef structure of Long Bay had 30% live coral cover. However, more recent reports stated that algal growth was smothering coral and preventing recruitment and NCRPS data has shown that live coral coverage on shallow reefs was <5% and on deeper reefs <10% (NCRPS, 2000).

Deterioration of coral reefs in NMP was also linked to recent beach erosion events and it was estimated that some areas of beach lost >10 metres of sand between 1997-2000 (NCRPS, 2000) and up to 20 metres during the past decade (Lapointe and Thacker, 2002). This has been attributed to the low cover of calcifying corals and macroalgae on reefs of Long Bay and the epiphytization of Long Bay turtle grass meadows by non-calcareous, fleshy algal species. Research by O'Sullivan (2002) during 2001 showed disturbing evidence that reef at the unprotected site outside NMP was healthier and had not suffered as much damage as the area studied inside NMP. This may be due to the fact that NMP users generally tended to remain within the Park boundaries (O'Sullivan, 2002) and caused greater physical damage there.

On a positive note, the decline of NMP's beach and eco-system can be reversed by reducing nutrient levels in the bay (Goreau, 1994) and intense lobbying by NMP brought about a reduction in nutrient load through installation of a sewage treatment plant in 1998/9. Farmer education and the organic programme by NMP also encouraged decreased input of agro-chemicals which was one of the principal nutrient sources (NCRPS, 2000). However, NCRPS monitoring data (1997-2000) showed that coral reef health continues to decline and that reefs were still dominated by macroalgae and suffering from bleaching and diseases (Lapointe and Thacker, 2002). Physical destruction of coral reef was also avoided by installation of >35 moorings for anchorages in 1991 which prevented 20,000 anchorages in the first year (Lapointe and Thacker, 2002).

5.6.3 Seagrass

Scientific data and discussions with fishers indicated that sea grass beds in an important area of NMP (Long Bay) have been negatively impacted during the past 30-40 years as a result of nutrient run off and turbulence and pollution from boats, jet skis and other watercraft (Thacker, 2002). Loss of seagrass beds was associated with beach erosion problems along Long Bay and impact on the fish nursery at the North end (Thacker, 2002).

There was also evidence of beneficial outcomes of management measures on sea grass. Self-enforcement and designation of Bloody Bay as a replenishment zone allowed the protection of mangrove and seagrass that have been reported to be in healthy condition (Goreau, 1994; Thacker, 2002). Zoning by NMP also kept

motorised craft away from the beach (Long Bay) and, as a result, decreased erosion brought about by turbulence and reduced deterioration of seagrass beds (Robinson, 1999).

5.6.4 Summary

It was difficult to draw a general conclusion about the ecological impacts of NMP due to lack of available long-term data. Results from recent research comparing ecosystems within and outside of the boundaries of NMP did not provide evidence that the site inside NMP had benefited from protection or that the site was ecologically superior to the unprotected site (O'Sullivan, 2002). Much still therefore needs to be achieved. However, it was also clear that there were locations within NMP that have benefited from management measures in terms of self-enforcement of fish nursery areas and changes in fishing practices. Recent qualitative evidence has suggested that NMP management activities have succeeded in at least reducing the serious rate of decline in ecosystem health of fisheries, coral reef and seagrass of the NMP.

5.7 Impact of the NMP on fishers

In this section results from discussions with fishers are presented. In Figure 5.2Figure 5.2 and Figure 5.3, potential beneficial and non-beneficial impacts of MPA's for these groups were identified. The main impacts as they might affect fishers are summarised below in Table 5-7 and the extent to which they were or were not the case formed the basis for our discussions with the fishermen.

Table 5-7 Summary of potential benefits and costs as they might affect fishers

Beneficial impacts	Non-beneficial impacts
Improve natural resource base and hence fishing related livelihoods	Decrease access to traditional fishing grounds with deleterious effect on catches or effort
Empower fishers and reduce conflict	Increase conflict between users of park
Increase tourism development with advantageous economic or social consequences e.g. • Increased market • Improved services	Increase tourism development with deleterious environmental, economic or social consequences e.g. • loss of sense of ownership • increased costs of living • too much in-migration • environmental degradation
Improve knowledge and skills	

Results in the following section are based on the opinions and perceptions of fishers. No studies were (or could have been) carried out to measure or quantify impacts. Apart from other logistical constraints, a major constraint was the lack of data on resource status, or livelihoods dependant on it, prior to the park's existence. However, it should be noted that, whilst every attempt was made during the interview to get an accurate picture of park impacts, even if perceptions had been widely 'inaccurate', they would still be crucial to understand in the sense that it is perceptions of how things are, as opposed to any objective reality, that influences what people think, feel and do.

5.7.1 Fishing practices in and around Negril Marine Park

Within the Negril Marine Park area there were 13 recognised fish landing sites, with the majority of fishers fishing from three of them (Little Bay, Orange Bay and the South Negril River Mouth). Interviews were held in all three main landing sites. Almost all fishing was carried out within the boundaries of the Marine Park.

Estimates of total numbers of fishers in the area varied considerably and no 'official' statistics existed. The head of the Fishers' Co-operative estimated around 300 professional (as opposed to subsistence only) fishermen whilst other estimates varied from approximately 200 to 350+ professional fishers. Most, but not all were exclusively fishermen. Generally women did not fish but they were often involved in processing or vending. In fact, most middle -'men' were women. Regarding change in numbers, fishers in Little Bay and Orange Bay stated that fisher numbers had remained stable in their memory but in Negril, fishers indicated that there had been a substantial increase in the number of fishers, younger fishers being attracted there from all over Jamaica because of tourism development. The head of the fishers co-operative also believed that, in general, fisher numbers were increasing.

The main gears, or fishing practices, in the area included;

- Traps/pots (average number per person estimated at 30-80);
- Hook and line; and
- Spear fishing.

And to a lesser extent trawling with seine-nets (more common in the past), diving, and setting of gill nets. Spear fishing was thought to be more common amongst the younger fishermen whilst the older fishermen were more likely to be using pots.

Species caught were many but included: various species of parrot fish, goat fish, snapper and grouper and other species such as conch, lobster, grunt and barracuda.

Regarding the seasonality of fishing, fishers fished all year but the period between September to November was considered a peak time for catching the 'running[18]' fish (e.g. snapper species).

5.7.2 Impact of park management on the fishery (opinion of fishers)

Opinions of fishers concerning the fishery around Negril are summarised in Table 5-8. As can be seen, with regards the NMP area in general, there was unanimous opinion that the fishery had declined (though the extent to which this was perceived to be the case varied between interviews). Most of the reasons proposed for this decline were related in some way to the development of the area, particularly tourism development. Few fishers thought over-fishing or inappropriate gears were a possible cause, though there was some consensus that seine-netting was a bad practice.

Given the steady decline in the fishery, fishers could not see that the Park had had a positive impact on the fishery or through this, their livelihoods. Whether the decline would have been greater if management had not existed was not something they felt able to comment on, though they did agree that, without the involvement of the park,

[18] Fish migrating between the feeding grounds to their spawning grounds.

some of the perceived causes of fish decline would have been worse and therefore that this was a possibility.

Table 5-8 General fisher perceptions of status of fishery

Fishing area	Status	Reasons
Within Negril Marine Park area	• All species disappearing since Negril development started in the 1970s (Negrl fishers) • All species decreased since 70's (goat fish and snapper species the most) in both numbers and size. Estimates varied but up to 30% decline in catches for same fishing effort (orange bay fishers) • All species decreased in numbers and some in size (Little Bay fishers)	• Pollution • Sewage. • Frightened off by noise pollution Dynamiting • Increased effort (Little Bay only) • Inappropriate gear (seine net)
Orange Bay fish sanctuary	• Increase in fish numbers • Starting to see an increase on edge of sanctuary • No increase outside sanctuary but expecting to see within 5 years	• Total ban on fishing
Little Bay fish sanctuary	• More fish (especially grunts and goat fish) • Not noticed difference outside the sanctuary	• Total ban on fishing

Fishers were far more positive about the effects of the fish sanctuaries on the fishery and all fishers spoken to were in agreement with these management measures, believing that further benefits would be reaped from them in the future. In general, fishers at Little Bay and Orange Bay were far more positive about the park than those at the Negril River Mouth and one of the reasons for this was thought to be the effort that had gone into implementing these fish sanctuaries and the participatory process through which this was done.

5.7.3 Impact of the marine park on fisher's access to the fishery

With the perception that there had been a decline in the fishery also came the perception that it had become harder to make a living from fishing, and fishers were having to work longer hours, or work in more dangerous conditions. Whilst this was mainly blamed on reduction in fish, mainly due, in turn, to tourist development, the park was also held partly to blame. Firstly, some believed the Park was not doing enough to help fishers. Examples included:

- Not doing enough to stop pollution and degradation of the marine environment; and
- Not sanctioning dive operators who they said were deliberately destroying their pots (and giving preferential treatment to watersports operators in general).

Secondly, there was almost universal disagreement with the planned fishing zones within the Park. These, it was believed, would have a very negative impact on fishers were they to be implemented and enforced. This was a matter that all fishers, with the exception of those at Little Bay who would not be affected, became very heated

about and which was at the centre of disputes between fishers and the Park. Problems with the proposed fisher zones, widely felt by all, included the following;

- Fishing zones too deep and too far out for smaller boats so they would need larger boats and engines, longer rope for pots and it would be in a more exposed/dangerous environment (some said there are bigger fish out there (e.g. tuna, bonita, jack, barracuda) if they had the resources to get there);
- Fishing was not as good in the proposed 'fishing' zone as in the proposed 'diving' areas as there was no reef. In 'diving' areas, fishing was much better as it was around the reef and it was also shallower (good for retrieving pots if the line was cut or buoy filled with water);
- The only zone that allowed fishing and included reef was an area that was dangerous to visit during windy weather and rough seas; and
- They shouldn't have had *any* no fishing zones in Jamaica.

A lot of anger centred around the fact that, firstly, they had not been properly consulted about these zones and the park wasn't listening to them and, secondly, that they were being treated unfairly, with the watersports industry getting all the best spots at their expense. Many fishers were of the view that tourists damaged the reef more than fishers' pots did. The general opinion was that if the no take zones were imposed they would still fish in them as they had no reasonable alternatives.

5.7.4 Impact of tourism development on fishers

One potential benefit of the Marine Park was that by improving or protecting the marine environment, it improved or protected the tourist industry that depended, to a certain extent on that environment. The importance of the Marine Park to the tourist industry is discussed in section 5.8. Here we investigate whether the fishers believed that the tourist industry benefited them, and therefore whether the Marine Park could be having an indirect effect on them in this respect.

The section above showed that most fishers believed development in general, and tourist development in particular, had had a negative effect on the fishery with the Negril Fishers (the central tourist town) being the most vocal on this point. However, most were not against tourism as an industry *per se* and they could see that tourism had brought benefits to their communities at large.

However, it had not brought benefits to fishers in particular and it had also had some negative consequences on their communities. One potential benefit specific to fishers might have been the increase in demand, and therefore value of their catches. However, fishers stated that they were still selling the majority of their catches to the local community because hotels generally served fillets of larger sea fish (e.g. tuna, barracuda) or farmed freshwater fish and therefore there was no increased market.

With regards the down effects of tourism to the community at large, these included;

- Drug use
- General pollution of the environment (e.g. garbage, sewage)
- Mass migration leading to less tourist jobs for locals
- Unemployment
- Major benefits of tourism not going to locals

Finally two fishers said that they had benefited from tourism by taking tourists up the river to the Royal Palm Reserve (an initiative discussed in the NMP management plan). However the prohibitive price of permits to do so made this option inaccessible to many and certainly to the poorest fishers.

5.7.5 Social impacts of park management

This section describes whether park management, park services or the users' interaction with the Park staff had had any positive social impacts. In this case reactions were mixed.

As mentioned in an earlier section, the development of fish sanctuaries at Little Bay and Orange Bay had had a positive impact on fishers in these areas. Not only were improvements seen in fish numbers but also there was a strong sense of empowerment in these two communities with fishers self-enforcing the regulations and acting together as a cohesive group. Thorough consultation throughout the development of the zones (which had taken over 5 years) was held responsible for this.

In stark contrast to this, fishers spoken to at Negril felt disenfranchised, felt they were not listened to and not considered by the Park authority or the Government (for example there had been no talk of compensation for loss of fishing grounds). In contrast, the tourism industry was fully supported. This had caused a considerable amount of resentment. A similar but less strong reaction was felt by the fishers in the other landing areas with regards the zoning plans.

One problem was the fishers' co-operative which all fishers believed to be ineffective and in some cases actually harmful to fishers' interests. With no vehicle for a collective voice and a lack of financial resources, they felt disempowered and unable to put their point across. Some of the Negril fishers had gone to meetings in the past (with the co-operative and with the Park) but they felt that nothing happened and they were a waste of time. The fishing co-operative's plans for the fishing village were met with some degree of scepticism.

With regards conflict, this still existed between fishers and dive-operators though it was not clear to what extent it might have been worse if the park hadn't been in operation. The fishers were largely in agreement with zones (except proposed fishing zones) and some, at least, believed that these had reduced potential conflicts between the different park user groups. There was a strong sense that communication and relationships between the park and the fishers (particularly the Negrl fishers) had been better in the earlier years of the park's existence, something also felt by the park staff themselves.

5.8 Importance of NMP to the tourist industry

This section is *not* looking at the extent to which the Park is protecting against any harmful environmental effects of tourism development but instead the extent to which it is an important asset, or essential to, the tourism industry. No studies had been carried out specifically on the importance of the park to the tourist industry. The only study of relevance that could be found at the time of this research was a tourist 'willingness to pay' for the reef study (Wright, 1994). Results from this and some opinions from members of the industry itself are given below.

5.8.1 Importance of reef to tourism

Wright (1994) analysed the responses of 105 tourists concerning the importance of the reef to their holidays and the value they placed on preserving it. Wright sampled from dive shops to ensure that at least some divers were included and the remainder were sampled from hotels in general. Fifteen of the 70 users (21%) who replied from the hotels didn't use the reef in any way suggesting that, if sampling and responses were random, 79% of visitors to Negril visited the reefs. An even higher percentage (96%) of this hotel sample felt that the coral reefs added to the enjoyment of their vacation experience, implying that visitors place a significant 'existence value' on the reef, getting enjoyment from knowing that they exist in a healthy condition even without visiting them. These results alone suggested that the Marine Park, having a major function of protecting the reefs, had a substantial role to play in the tourist industry. A dive survey of divers in the Marine Park in 2001 estimated numbers at around 4200 dives, again indicating the importance of the reef to the tourists (Rigall, 2001).

This finding was corroborated by those in the tourist industry with all asked thinking that the marine resource, including the beaches, was vitally important. Respondents prioritised the selling points of Negril as a tourist resort differently but they always included the following; the beach, the sun, the reef and the people. Both the main beaches and the reefs visited were within the park boundaries.

5.8.2 Impact of park management on the reef

Ecological impacts were discussed briefly in section 5.6. Amongst those interviewed in the watersports industry, opinions on the effect of management on reef status was mixed. Some actually believed that the reef had improved in the last 5 years whilst others said that rough seas had broken off the corals, which is why they were in decline. In any case, decline was attributed to natural causes and all interviewed felt that the Marine Park had an important role to play in reef protection and that regulations regarding mooring, the different zones, fishing restrictions and education schemes conducted by the Park had all had a positive effect on the environment. Just as fishers did not believe they themselves were the cause of any environmental degradation, so those responsible for taking out tourists said, in contrast to the fishers, that the tourists were not responsible for damaging the reef.

5.9 Impact of NMP on poorer groups involved in the tourism industry

In the last section, it was shown that both the reef and the beach were considered crucial assets of the tourist industry and given NCRPS's role was to protect both, its potential beneficial impact on the tourist industry was substantial. With the tourist industry came opportunities for employment and from information in section 5.4, it was shown that the tourist industry did employ some of those considered to be the poorest in the community. Table 5-9 summarises the potential impacts of the NMP on poorer stakeholders involved in the tourist industry. The extent to which these had or had not been realised formed the basis for our discussions with these stakeholder groups.

Table 5-9 Potential impacts of NMP specifically on poorer stakeholders involved in the tourist industry

Beneficial impacts	Non-beneficial impacts
Improved tourist environment, hence increased tourism development with advantageous economic or social consequences e.g. • Improved conditions, more opportunities for employment • Improved services	Increased tourism development with deleterious economic or social consequences e.g. • Loss of sense of ownership • Decreased access to beaches • Increased costs of living • Too much in-migration • Pollution
Community empowerment, reduction in conflicts between park users	Increased conflict between users of park
Improved knowledge and skills	

Owing to time constraints, hotel staff (maids, gardeners, waiters etc) were, unfortunately, not able to be interviewed. It was also not possible to interview any of the unemployed people in the region, a significant constraint as unemployment rates were high and such interviews may have given indications of the constraints faced by these groups. Information below is a result of interviews with poorer sectors of the watersports industry (employees of large watersports operator, glass bottomed boat owners) and craft vendors.

5.9.1 Impact of park on their income generating opportunities

Unlike the case for fishers, Park regulations had not restricted the activities of those in the watersports industry or the craft vendors so there were no perceived direct negative impacts.

Amongst other things, there were now specific places for mooring boats and more environmental education for themselves and for tourists, but the watersports operators were unanimously in favour of these initiatives and widely supported any moves to protect the reefs. For the watersports operators, the park had a crucial role to play in protecting their livelihoods and any criticisms they had were that the Park was not doing, or was constrained from doing, enough. In contrast, the craft vendors believed the park had neither a positive nor negative impact on them, the Park being largely irrelevant to their lives (though they did concede that if it protected the environment it would bring in the tourists). All interviewed said they relied heavily, if not completely, on the tourist industry for their income and there were few alternative options. None spoken to saw farming or fishing as viable options.

With regards access to the tourism industry, the glass bottomed boat owners said that the number and prices of permits were a major constraint to entering the industry aside from becoming an employee for one of the large hotels, echoing what had been told to us by the NCRPS staff[19]. Craft vendors also required a number of permits. This problem had just become even more serious for boat owners with an apparent recently announced rise in boat licence fees from US$45 to US$600/year. We were unable to confirm these figures, but if correct this would be a serious problem for smaller outfits. At the time of the research, there was no watersports association within the Park, a constraint suggested by the glass bottom boat owners and one that they wanted to address.

[19] These licenses were issued by the government not NCRPS.

5.9.2 Other impacts of park management

Unlike the fishers, it appeared that the respondents discussed above had not been involved in consultations with the NCRPS. Whist they were sure watersports operators had been involved in original plans, those we spoke to said it would have been their employers or larger operators that were spoken to. There was apparently a craft vendor on the NCRPS Board but she was off the island (and had been for some time) and the craft vendors spoken too were very unaware of what the Park did, even though their offices were next door,

This situation was very different from the relationship between the NCRPS and fishers at Orange Bay and Bloody Bay and the strong sense of community and empowerment that had come from those places. There was not the same sense that the Park were working with the locals in these sectors, however this also may not have been necessary as the poorer stakeholders in the tourist industry perceived themselves either not affected by Park management or agreed with regulations put in place.

In contrast to the fishers who still thought that there was considerable conflict between divers and fishers, divers we interviewed seemed to see it as a problem that had passed or at least was passing. They also thought that there was now less fishing on certain parts of the reef than there used to be and the reason for this was that the fishers had been educated about the damage their pots did to the reef. Spear fishers were still considered a problem though.

Finally, far more than was the case with fishers, the watersports operators emphasized the importance of the Park's role as educator, how they had personally benefited from this, and how it had been widespread and effective.

5.10 Impacts of NMP management on small farmers

Small farmers were more likely to have had an impact on the Marine Park than *vice versa* but NEPT and NCRPS, understanding the impacts of land based environmental degradation on the marine environment, recognised the need to work with rural communities addressing their needs in order to reduce environmental degradation. Several initiatives, co-ordinated by NEPT as opposed to the NCRPS, were currently underway to achieve this.

Unfortunately time constraints and logistical problems meant that only one farmer was interviewed, an organic farmer from Springfield who was part of a NEPT initiative to introduce organic farming to the area in an effort to reduce agricultural run off in streams, river and sea. Results from this interview are backed up with data from the socio-economic assessment (SEA) of the Negril EPA (CARECO, 2001).

There were several initiatives mentioned in the SEA (many concerning NEPT but none directly NCRPS) that were underway to help the rural communities. Despite a positive write up for some of these initiatives, and recommendations that they be supported and developed, the SEA found that the environmental issues that were of key importance in 1995 were still critical and little had changed with respect to the needs of rural communities regarding sewage, domestic water and solid waste disposal.

Farmers were recognised as one of the poorest groups in the rural communities in the EPA but the biggest problem facing them (including the farmer interviewed) -

flooding caused by blocked canals in the Morass - was not one NEPT were desperate to solve. This was because the Morass acted as a giant filter eliminating wastes coming from the underground water sources in the Fish River Hill area and draining was not therefore a preferred option.

With regards the organic farming, apart from problems with flooding, the farmer interviewed stated that he had problems selling his product and much went to waste. This was also picked up in the SEA, which saw product marketing as a significant constraint. Marketing mechanisms needed to be improved and, for this to be the case, NEPT should have a marketing specialist on staff. In the report, hoteliers stated that they did not buy the local produce because they could get cheaper, better quality and more regular supplies elsewhere. Farmers then were not benefiting from the increased market demand generated by the tourist trade.

In the SEA, it was noted that it was not only the farmers who were not benefiting from the tourist trade, another constraint for rural communities in the EPA being the lack of positive backward linkages from tourism. It stated that the "positive impact of tourism on rural communities in the EPA was limited' giving the following reasons;

- Employment not extended to those communities
- Communities have grown due to in-migration
- Higher housing costs
- Increased crime (CARECO, 2001 p.35)

With regards employment, the seriousness of this constraint can be seen from a survey of employees of 7 Negril hotels (480 employees) only 3% of whom actually came from Negril (CARECO, 2001 p.29). These findings support the similar views expressed by the Negril fishermen reported on in 5.7.4. Hoteliers in their defence said that too much was being expected of tourism and that they found it difficult to hire well-educated staff from the area.

In summary, it was not obvious that the EPA was having a significant positive impact on poorer communities within its boundaries, though more plans were being initiated for the future. Poverty in the area was a problem in itself and also a significant cause of environmental degradation, which in turn impacted on the Marine Park. The lack of benefits from tourism, linked to resources within the Marine Park itself, was a significant constraint.

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

Opinions of park management varied considerably between respondents, from negative, to ambivalent or unaware, and finally positive. In fact opinions were generally split along user group lines. Those involved in the watersports industry, whilst seeing some constraints, were generally very positive towards Park management. Fishers were less so, with the notable exception of the Parks role in initiating fish sanctuaries which was universally approved of. Finally those not directly affected by the Park (vendors and the farmer) were unsurprisingly ambivalent or unaware of the Park's activities. A summary of strengths / opportunities and weaknesses / constraints are shown in Table 5-10 and Table 5-11 respectively.

Table 5-10 Strengths and opportunities of management perceived by those working in and around the Park

Strength / opportunity	Impact	User group
Initiated fish sanctuaries	Increase fish numbers	Fishers
Anchorage and swimming zones	Improve safety and protect reef	Watersports operators
Education programme	Improved education of al park users, locals and children. Increased environmental awareness and therefore protection of marine environment	Watersports operators and some fishers
Lobbying	Trying to protect the long term interests of Negril	Watersports operators

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

Table 5-11 Constraints and weaknesses of management perceived by those working in and around the park

Constraint/weakness		User group
Lack of consultation about fishing zones and not listening to fishers	Anger and resentment, sense of disenfranchisement	Fishers
Lack of buoys	Reef damage, fish sanctuaries not demarcated	Watersports operators Fishers
Lack of rangers and enforcement	Regulations broken, leading to reef damage	Watersports operators Fishers
Less meetings than previously and less information about park activities	Less awareness	All user groups

Many of the problems faced by these user groups were not a direct result of Park management and so these are not presented in Table 5-11. However, they were important and included the following;

- Negative effects of tourism development (increased in-migration, crime, pollution, housing costs);
- Prohibitive prices of licenses to get into tourist industry and time it took to get them;
- Lack of jobs/ jobs going to outsiders; and
- Lack of enforcement of those from outside the NMP (e.g. dynamiters)

5.12 Summary

This section is split into four parts: ecological outcomes of resource management; factors believed by staff to be affecting ability to achieve management objectives; problems related to any lack of benefits that the MPA brings the local community, specifically poorer groups; and finally, opportunities that have presented themselves by increasing benefits for these groups.

Ecological evidence is sparse due to lack of long tem data but it is clear that much still needs to be achieved. Research from multiple sources suggests deterioration in the condition of all resources that the Marine Park attempts to protect (e.g. fishery, coral reef, seagrass beds), though data is not always conclusive. On the other hand there is evidence of localised improvements (such as within fish sanctuaries) and suggestions that management measures have in some cases, at least reduced the rate of decline of ecosystems. Given that the area within the park is subject to far greater tourism pressure than surrounding areas, and also accommodates a larger fisher population, it is expected that the deterioration within the park would have been much greater than it currently is without management (and probably greater than that in the surrounding areas).

Factors that those involved in management thought were particularly constraining their ability to achieve management objectives were varied. First and foremost was the lack of funding and uncertainty surrounding funding in the future. This had had a number of operational effects but, in their opinion, had particularly reduced their ability to adequately patrol and enforce, to carry out adequate scientific monitoring and research and had reduced their education and communication/consultation programmes. Reduction in these latter outreach programmes was blamed for the decline, in some quarters, for support of Park activities. Apart from funding and its associated problems, the lack of legal mandate to manage had, they believed, reduced their authority and therefore effectiveness. This authority has since been given to them and this may help what was perceived to be other significant problems; unchecked tourism development and land based sources of pollution. Substantial vested interests on the part of developers, small fines, lenience even when perpetrators were brought to court and lack of powerful support from higher agencies left Park management in a weak enforcement position.

Research showed that poverty was significant in areas in and around the Marine Park and that many of the livelihood options of these poorer groups were affected by, or affected, marine park management (either directly or indirectly). These livelihood options included: fishing; small-scale farming; working as small watersports operators or employees of larger watersports operators; and other opportunities associated with the wider tourist industry.

With regards the benefits that Park management brought poorer groups, it was clear that significant effort had been made to address the concerns of some groups through consultation (e.g. in developing the zonation programme) and alternative livelihood options had been identified to discourage damaging activities or provide alternatives where changes to existing practices were required. The education programme had also been widespread and inclusive. The extent to which these activities had been successful varied, as did their subsequent impact on management performance. Here, only those issues that had caused particular problems or opportunities are mentioned.

Firstly, with one important exception discussed below, fishers were, at the time of the research, unhappy with park management and felt their needs were not being addressed and that they were not being adequately consulted. Unhappiness centred around the planned total implementation of the zoning plan which would exclude them from the preferred fishing grounds and, according to most, would make their livelihoods untenable. Many also believed that those in the tourist industry were benefiting at the fishers' expense and this was perceived to be unfair. This was a significant problem for Park management, one that would only get worse when attempts were made to rigorously enforce the zoning plan. Park staff felt that a

decrease in consultation efforts over the past few years had led to a worsening relationship between them and the fishers and that this should be reversed. However, the problem was always going to be a significant one, and without realistic alternatives (which had, as of yet, failed to materialise), compromises on the zonation plan might have to be made. Park staff already acknowledged that enforcement could not be effective, even if funds were available to increase patrolling efforts, without some level of agreement on the part of the majority of fishers. Up until then, voluntary compliance achieved through education and dialogue had been the most successful way through which the most harmful fishing practices had gradually been eradicated from the Park. It had long been recognised that alternatives would have to be found if fishers were to be displaced/negatively impacted on, but a weak fishers' co-operative was one reason given for why alternatives (such as involvement in the tourism industry as tour guides) had failed to materialise.

Another initiative expected to help poorer groups that had had limited (though not insignificant) success and therefore continued to be a problem for the Marine Park was the introduction of organic farming to small farmers within the EPA. One constraint had been the lack of a guaranteed market for the organic crops produced which prevented the farmers from reaping enough benefits to persuade other farmers to change their own farming practices. The use of fertilisers and pesticides was therefore still commonplace.

Despite these significant problems, some initiatives involving poorer groups were providing management opportunities, the greatest example being the co-operation of the fishers in creating fish sanctuaries. These sanctuaries had not been in place long, but already fishers felt they were seeing benefits and with them monitoring and enforcing the regulations concerning the sanctuaries themselves, pressure had been taken off the Marine Park staff to patrol. The sanctuaries had been developed after a series of meetings and long process of consultation with fishers. In these areas Park staff were respected and seen as part of the community. This process was seen as mutually beneficial; benefiting the fishers (both in terms of improving the fishery and increasing their sense of ownership of it); helping the Park staff to achieve their objectives and carry out their jobs more effectively and, of course; protecting the marine environment. This mode of working had been one of the most successful ways in which the Park had gained the acceptance and interest of local stakeholders in the protection of Negril Marine Park, an acceptance and interest that was crucial for the long term sustainability of the Park and one that should be continually nurtured and improved. Where changes to local practices are deemed necessary (and given the ecological condition of the Park, it would seem that they are) every effort should be made to develop new plans with the full involvement of affected parties.

5.13 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 5-12 Interviews with park management and other park decision-makers

Respondents	
NMP staff	Individual and group interviews with all park staff
NCRPS Board members,	Individual interviews with • Hotelier

Respondents	
	• Watersports operator • Head of fishers' co-operative, Negril • Community Leader
NEPT	Individual interviews with Director and Community Liaison Officer

Table 5-13 Interviews with poorer communities working in and around the Park

User group	Interview
Fishers & fish processors / vendors	4 individual interviews 4 group interviews with total of 14 participants
Craft Vendors	Mix of group and individual interviews with 4 craft vendors
Watersports operators • Glass bottom boat owners • Employees of larger dive operations	 1 Individual interview 2 group interviews with 6 participants
Farmers	1 interview with organic farmer

Table 5-14 Participants at result feedback and discussion session

Role	Name
President NCRPS	Roberta Pryor
Treasurer NCRPS	Kenric Davis
Community member	
Community leader (Little Bay)	Ceylon Clayton
Rangers	Courtney Black, Everton Frame, Webster Gabbidon
Education Officer NCRPS	Chantelle Black
Administrator NCRPS	Elsa Hemmings
Manager NCRPS	Carl Hanson
Negril Fishers Co-operative	Oscar Reckford
Manager of NEPT	Brain Zane
Board member of NEPT	Leroy Dawes

5.14 References used during case study research

Anon. The Natural Resources Conservation Authority Delegation Instrument

Anon. Amended Articles of Association for NCRSP Ltd

Anon. The Natural Resources Conservation Authority Act

Anon. Various leaflets/manuals including Junior Rangers Programme

Anon. Towards an ocean and coastal zone management policy in Jamaica. Prepared by National Council on Ocean and Coastal Zone Management.

CARECO (2001) Socio-economic assessment of Negril environmental protected area. Prepared for NEPT, Negril, Jamaica.

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

Goreau, T. F. (1960) Report on a biological survey of the offshore regions bordering upon the Negril Green Island area. Negril Land Authority.

Goreau, T. (1994) The Negril watershed: habitats and ecosystems. NCRPS Annual Workshop, 1994.

Klomp, K. (2000) AGRRA workshop and assessment of Jamaica's reefs. http://www.coral.noaa.gov/agrra/reports/jamaica.htm.

Lapointe, B.E. and Thacker, K. (2002) Community-based water quality and coral reef monitoring in the Negril Marine Park, Jamaica: land-based nutrient inputs and their ecological consequences. *In* The Everglades, Florida Bay, and coral reefs of the Florida Keys, an ecosystem sourcebook: 937-960. Porter, J W and Porter, K G (Eds). Boca Raton: CRC Press

NCRPS (2000) State of Negril's reefs, Year 2000, *Negril Reef Rap news magazine.* Vol. VI, No. 1: 1-3. Negril Coral Reef Preservation Society, Negril.

Negril Area Environmental Protection Trust, Natural Resources Conservation Authority, Negril Green Island Area Local Planning and the Negril and Surrounding Area Communities (1997). National Environmental Protection Plan. Negril, Jamaica.

NRCA (2000) Jamaica country environmental profile. Chapter 2: Protected Areas. Natural Resources Conservation Authority, Jamaica

O'Sullivan, C.H. (2002) A preliminary assessment of the ecological impacts of two marine protected areas in the wider Caribbean. Draft MSc Thesis. UWI, Cave Hill, Barbados.

Otuokon, S. (1997) *Negril Marine Park management plan.* Negril Coral Reef Preservation Society, Negril. December, 1997.

Polunin, N.V.C. and Williams, I.D. (1999) Reef condition and recovery in the Caribbean. *Marine systems research group technical report 6.* DFID NRSP LWI Project R6783.

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. UWI, Cave Hill, Barbados.

Riggall, M. (2001) Number of divers in Negril Marine Park. NCRPS, Negril, Jamaica.

Thacker, K. (2002) Community participation in the creation of the Negril Marine Park NCRPS, Negril. January 2002.

Wright, M. (1994) An economic analysis of coral reef protection in Negril, Jamaica