Increasing MPA effectiveness through working with local communities

GUIDELINES FOR THE CARIBBEAN

htspe NRSP MRAG DFID

DFID Natural Resources Systems Programme

MRAG

ACKNOWLEDGEMENTS

Collaboration for research underpinning these guidelines started in 2001 with researchers from the Cave Hill campus of the University of the West Indies, notably Dr Hazel Oxenford and Dr Winston Anderson who reviewed and contributed to research mentioned in these Guidelines. We would like to thank MSc students under their supervision who assisted with collection of field data contributing to this research, and whose work was jointly sponsored by the Natural Resource Management Programme. Particular thanks go to colleagues at the Caribbean Natural Resources Institute (CANARI) who produced a characterisation of Caribbean MPAs as the first stage of this project.

We would like to thank the UK Department for International Development (DFID) for funding the underlying research and the production of these guidelines through their Natural Resources Systems Programme. We would especially like to thank Dr Margaret Quin and Dr Chris Mees for their support in extension of our research to enable collaborative development of these guidelines. This publication forms an output from research funded by DFID for the benefit of developing countries. The views expressed are not necessarily those of DFID.

The staff of Admiral Cockburn Marine Park, Cabrits Marine Park, Chalk Sound Marine Park, Glover's Reef Marine Reserve, Hol Chan Marine Reserve, Negril Marine Park, Princess Alexandra Land and Sea National Park and Soufriere/Scott's Head Marine Park are gratefully acknowledged for their tremendous assistance and co-operation in the collection of field data. We also enjoyed feedback from many MPA practitioners, policy makers and academics during the final project workshop at the 55th Meeting of the GCFI in Mexico in November 2002. A number of participants from this workshop joined a Working Group to develop these guidelines, and particular mention goes to Carl Hanson (Negril Marine Park), Janet Gibson (WCS), Patrick McConney (CCA), Peter Murray (OECS), Jack Nightingale (TASTE) and Alessandra Vanzella-Khouri (UNEP) who actively assisted with development and contributions to these guidelines.

Finally, we would like to thank colleagues at MRAG Ltd for their discussions and interactions during this project, and particular thanks go to Vicki Cowan - without her encouragement, the project would not have happened.

Authors of these guidelines: Caroline Garaway and Nicole Esteban.
The guidelines can be referenced as follows:

Garaway, C. and Esteban, N. (2003) *Increasing MPA effectiveness through working with local communities. Guidelines for the Caribbean.* MRAG Ltd, London, UK 45pp.

This publication is an output from the project '*Institutional arrangements for Caribbean MPAs and opportunities for pro-poor management*' (NRSP-R7976), funded by the UK Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID.

These guidelines can also be found on the MRAG website www.mrag.co.uk (select 'Land Water Interface' from left hand column, then 'Selected Project Examples' and refer to the MPA project section), or the NRSP website at www.nrsp.org.uk

CONTENTS

Photos

Front Cover: Tour guides discussing the advantages and disadvantages of different dive sites, Negril Marine Park, Jamaica. (Source: C. Garaway and N. Esteban.)

Back Cover: Local Statian children get involved in the summer snorkel camp whilst parents are working, St Eustatius National Marine Park (STENAPA). (Source: N. Esteban.)

WHY THESE GUIDELINES?

Aim of guidelines

In these guidelines we are using the IUCN definition of an MPA "any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part, or all, of the enclosed environment."

The aim of these guidelines is to show how working more closely with people living in and around Marine Protected Areas (MPAs) - addressing their needs and concerns and encouraging their involvement in management - can lead to increased MPA effectiveness.

MPAs are rarely set up by, or explicitly for, the general populace living in or around them, yet MPA implementation can have a profound effect on these people's livelihoods, affecting, for example, their sources of income or nutrition, or their means of recreation. At the same time, the activities of local people impact on resources within MPAs and can therefore have a significant effect on the success of any management initiatives.

These guidelines highlight these two-way impacts. They suggest how negative consequences can be minimised, positive consequences maximised, and how local involvement in management can be fostered to improve the effectiveness of MPA operations.

For more information about the project that has informed these guidelines and its outputs, see Part 4.

Information here is not in the form of a step-by-step guide, but instead a selection of ideas, real-world examples from the Caribbean region, and theoretical insights/ methodologies that have been shown to be useful when addressing issues of MPA management. We hope it will be a useful reference guide and source of advice, or an aid to designing management plans and strategies. Many successful initiatives already exist in the region but, due to its geography, they often occur in isolation and are not heard about or shared. These guidelines introduce some of these examples and provide information on where you can find out more.

Information sources for these guidelines

As mentioned on page 2, these guidelines are the end result of a project on 'Institutional arrangements for Caribbean MPAs' funded by the UK Department for International Development (DFID). Much of the information in these pages comes from this research, which, amongst other things, included a questionnaire survey of 80 MPAs in the Caribbean region as well as more detailed case study research in a smaller selection of sites. In addition to this, much of the specific case study material has come directly from individuals involved in MPA management in the region, and sources are fully referenced in the text. Finally, where it has been thought to be particularly relevant, information has come from literature which, along with other useful sources of information, is detailed at the end of this guide.

What do we mean by 'communities'?

When planning these guidelines there was much debate about whether to use the words 'local communities' or 'local stakeholders' in the title. One of the main aims of this guide is to highlight the role of people who are frequently not **acknowledged** as local MPA stakeholders, so the more inclusive term 'community' was preferred. Used here, the term refers to the non-homogenous set of people who live in or around the MPA.

Who is this guide for?

- Those responsible for the day-to-day operations of an MPA (e.g. MPA managers; Advisory Boards/Management Committees) and/or;
- those who make decisions on how an MPA will be managed (e.g. those responsible for writing management plans; those with access to MPA funds; and local/national institutions with control over MPAs).

GUIDELINES STRUCTURE

PART 1 - Local 'communities' & how they can help or hinder you

This section highlights the impacts local people can have on MPA management and vice-versa, and suggests areas in which local people can become more actively and positively involved, giving examples from the region. It provides some guidance on how to identify and assess local stakeholders, including poorer groups, a crucial first step to developing better relationships. The section ends with a set of key learning points.

PART 2 - They will help you if you help them

One of the keys to getting more positive involvement, or acceptance, from local people is to ensure that the MPA benefits them or does not seriously adversely affect them. This section concentrates on the benefits that an MPA can provide to local people, particularly poorer groups, and the factors that constrain or facilitate these benefits being realised. Again, it presents case studies of successful and less successful examples in the region and finishes with a set of key learning points.

PART 3 - Creating an environment for effective collaboration

Having shown the benefits of community involvement and the costs of non-acceptance (PART 1), this section focuses on **how** local individuals/groups can be engaged and encouraged to become more actively involved in, or supportive of, MPA management. Providing or ensuring benefits (PART 2) is only one part. To start, this section presents some theory on collective action and implications this has for MPA design. Following this, mechanisms for local involvement in decision-making, and approaches and skills required, are discussed, using case studies to highlight key ideas. This section also finishes with a set of key learning points.

PART 4 - Resource and reference guide

The final section fully references all case study material and literature cited in the guidelines. It also provides an annotated bibliography of other useful information including full details of all the outputs from the DFID project that funded the production of these guidelines.

A stakeholder is "any party with an actual or potential interest in the economic, social or cultural use of a resource as well as any individual, community, organisation or institution who can affect, or be affected by, changes in the status and use of the resources." (Renard et al. (2001) p.8).

Princess Alexandra Land and Sea Park. Turks and Caicos. (Source: N. Esteban and C. Garaway.)

COMMON PROBLEMS OF MPA MANAGEMENT

Quote from Horril et al. (1996).

"Establishment of protected areas often generates resentment in traditional user communities - undermining viability of protected areas."

There are many problems that can affect MPA operations and here they are split into three broad groups.

1. Problems that prevent management programmes being put in place or sustained in the first place.
2. Problems with non-compliance, bad practice or non co-operation that undermine management programmes even when they are up and running.
3. Problems of ecological design that result in poor ecological outcomes despite active management programmes and good compliance.

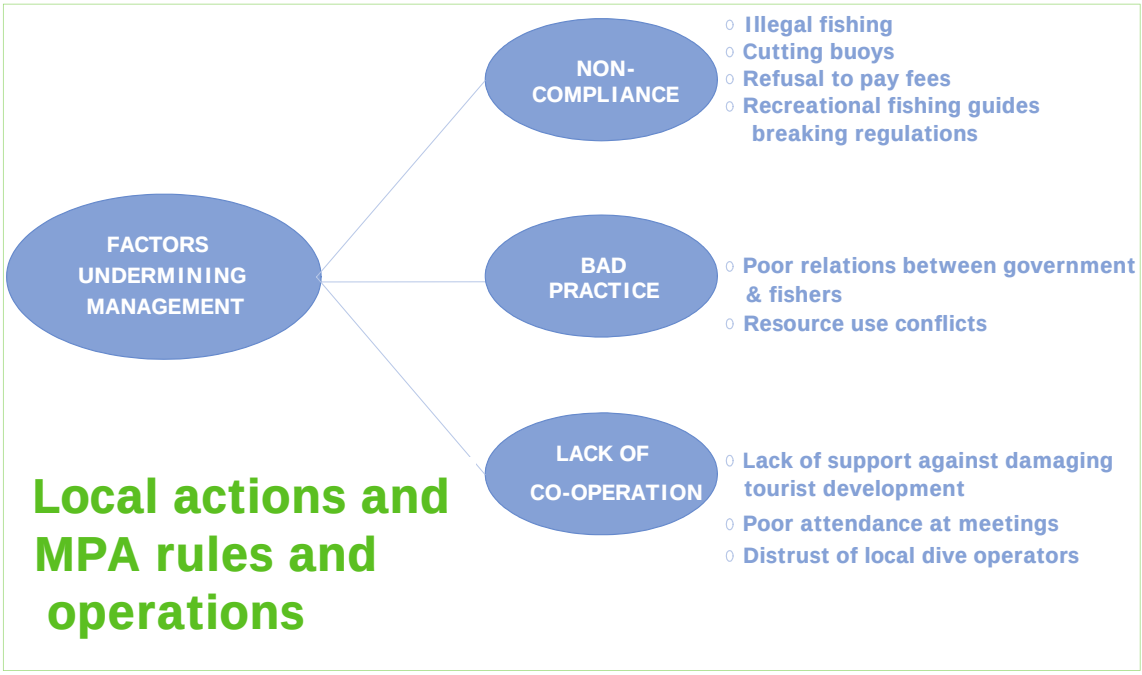
Categorisation of problems and details of problems in each category can be found in Esteban and Garaway (2002).

There is obviously some overlap between these groups, and solving problems in one may have a knock-on effect on problems in others. For example, good compliance (group 2) can reduce monitoring and enforcement costs thus decreasing financial problems (group 1). Or, good co-operation (group 2) can lead to better local technical knowledge therefore improving ecological design (group 3).

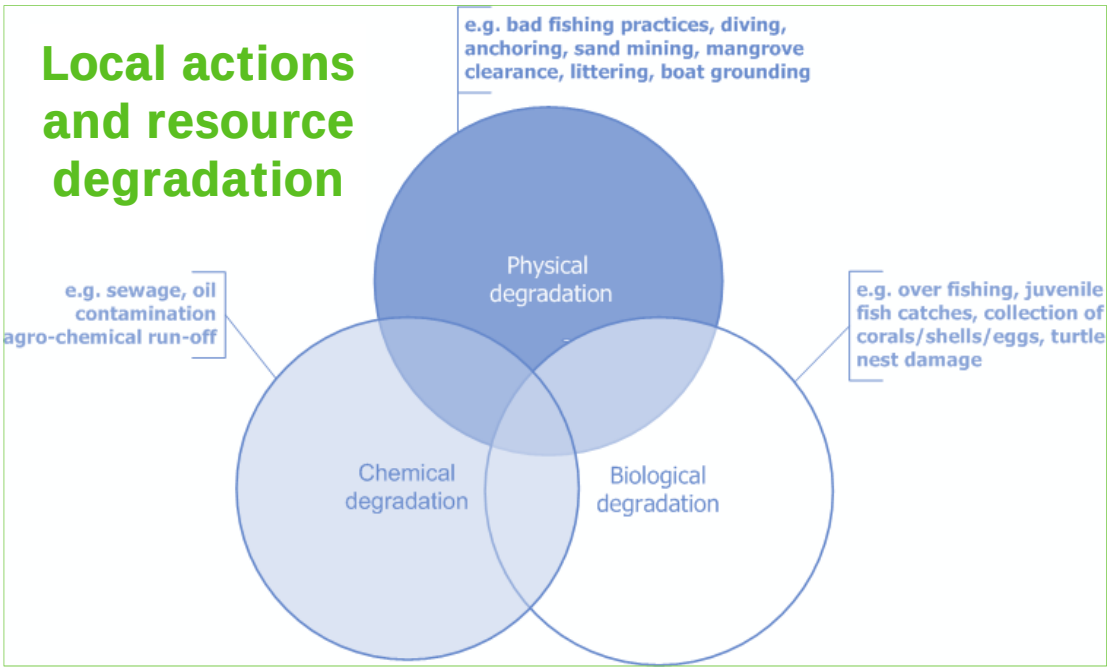
Despite the relevance of all these groups to MPA management, it is the second set of problems, and how they can be minimised, that these guidelines address, as it is these problems that most frequently involve local stakeholders. As Horril et al. (1996) state, such problems can be serious enough to undermine the viability of a protected area. The diagram below shows some of the problems encountered by MPAs in our case study research, all of which were affecting the MPAs' ability to manage effectively.

Despite a focus on these problems in these guidelines, the first group of problems require a mention. Results from our research indicated that the main problems included: sustainable funding; personnel problems; and poor institutional design (in particular, lack of devolution in decision making and lack of integration, communication or clearly defined roles between different organisations). Due to their importance, further sources of information about some of these subjects can be found in Part 4.

Results from discussions with Marine Park staff in four MPAs. Garaway and Esteban (2003).



THAT MAY INVOLVE LOCAL PEOPLE



With a lack of compliance or co-operation, or bad practice amongst locals, effective management becomes more difficult and in some cases impossible. At the very least, monitoring and enforcement will need to be increased and this is frequently beyond the manpower and financial resources of most MPAs.

Indeed, in the majority of cases, a certain degree of co-operation from those who utilise the area, or who impact on the resources within it, is essential for an MPA's success. Despite the fact that this is widely acknowledged, it is frequently not acted upon. Later pages of these guidelines discuss ideas for how such co-operation can be earned and some possible means of establishing it.

Without co-operation, some of the ways in which local actions can cause resource degradation are described above. These types of degradation are obviously interlinked with one having implications for another.

But how prevalent are actions amongst local people that undermine MPA management? Below are some statistics, collected from research funded through this project, of the extent to which problems of non-compliance and co-operation are prevalent in the region.

Conflict and non-compliance in the region

According to a survey of 80 MPAs in the Caribbean region, less than 50% surveyed had more than a low level of active management and 25% had none at all (Geoghegan et al. 2001), showing there is still much room for improvement in the region as a whole. Questionnaires were filled in by those responsible for management of that MPA or other involved parties.

Of those who responded to the question of the extent of conflict (n=49), 84% indicated that there was conflict of some kind concerning the MPA. This included 28% incidence between the MPA agency & traditional users (fishers), and 32% between local user groups (divers and fishers). Conflict then frequently, and unsurprisingly, involves local people.

Whilst not specifically asked, 30% of MPAs volunteered information regarding non-compliance, including poaching and illegal dumping by those living in and around the MPA.

Information taken from the data collected in order to write Geoghegan et al. (2001).

IDENTIFYING & ASSESSING STAKEHOLDERS

For a definition of 'stakeholder' see p.5.

The previous pages illustrated the negative impact local people can have. In order to start addressing such problems and/or bring about a more positive relationship, it is necessary to know exactly **who** the local stakeholders are and to identify their needs and priorities. A first step towards this is to conduct a stakeholder analysis.

What is a stakeholder analysis?

For tools and steps on conducting a stakeholder analysis, the following website was found to be particularly useful. http://www.iied.org/forestry/tools/stakeholder.html. Other references are given in Part 4.

It is an approach for identifying the key stakeholders in a system, and assessing their respective interests in, or influence on, that system. More simply, it is about asking questions like: Whose problem? Who benefits? Who loses out? What are the power differences and relationships between stakeholders? What relative influence do they have? By exploring these questions with respect to MPAs, key differences and areas of potential common ground among groups can be found. NB: It should not be confused with techniques to facilitate stakeholder involvement or input in managing natural resource (NR) projects or conflicts (discussed in Part 3). Stakeholder analysis (SA) may be part of the 'stakeholder approach to management' but is not synonymous with it.

There are many different versions of the activities to be undertaken in a stakeholder analysis, but here is a suggested outline, with more details for steps 1 - 4 given below.

1. Identify key stakeholders.
2. Investigate stakeholders' interests, characteristics and circumstances.
3. Identify patterns and contexts of interaction between stakeholders.
4. Assess stakeholders' power and potential roles.
5. Assess options and use the findings to make progress.

1. Example questions for initial identification of stakeholders.

- Who are potential beneficiaries?
- Who might be adversely affected?
- Who has existing rights?
- Who is likely to be voiceless?
- Who is likely to resent change and mobilise resistance against it?
- Who is responsible for intended plans?
- Who has money, skills or information?
- Whose behaviour has to change for success?

2. Examples of questions to investigate stakeholders' interests, characteristics and circumstances.

- What are the stakeholders' experiences or expectations of the MPA?
- What benefits and costs have there been, or are there likely to be, for the stakeholder?
- What stakeholder interests conflict with the goals of the MPA?
- What resources has the stakeholder mobilised, or is willing to mobilise?

Questions here are adapted from the IIED website mentioned above. Step 5 is also elucidated in more detail here.

3. Method for identifying patterns and contexts of interaction between stakeholders

The IIED website suggests a method known as 'the four R's' to aid identification.

Rights	**Responsi-bilities**
Relation-ships	**Revenues**

For more information on this see http://www.iied.org/forestry/tools/four.html.

4. Example questions for identifying stakeholders' power and potential roles.

- Who is dependent on whom?
- Which stakeholders are organised?
- How can that organisation be influenced or built upon?
- Who has control over resources?
- Who has control over information?
- Which problems, affecting which stakeholders, are the priorities to address or alleviate?
- Which stakeholders' needs, interests and expectations should be given priority?

GETTING STARTED

There are a number of ways information for an SA can be elicited. They include:

- Identification by staff of key agencies, and other knowledgeable individuals.
- Identification through written records and population data.
- Stakeholder self-selection. Encourage stakeholders to come forward through announcements in meetings, newspapers, local radio or other local means of spreading information.
- Identification and verification by other stakeholders. Early discussions with those stakeholders who are identified first can reveal their views on the other key stakeholders who matter to them.

Having explored the issues relating to steps 1 - 4, stakeholders can be categorised and information tabulated to help think about step 5. (If the information to complete these steps adequately is not available, further research may be necessary and for this see p.10 and 11).

A number of categorisations of stakeholders can be used, but some of the most common include: primary/secondary; directly/indirectly impacted on; positive/ negative relations; weak/strong connections; influence/importance.

Whilst such categorisations can over-simplify the situation, used carefully they can also help to clarify key relationships and impacts and identify key stakeholders that should be considered by the MPA management agency.

An example of an office-based stakeholder analysis by a group of MPA staff, using different colour cards to highlight stakeholder characteristics. (Source: C. Garaway and N. Esteban.)

Who should conduct an SA?

SAs are rarely undertaken by individuals, but the extent to which the identified stakeholders are involved in the process varies considerably. Whilst literature often advocates that stakeholder analysis is undertaken in a participatory fashion, Renard et al. (2001) state that in the Caribbean region this is neither always the case, nor is it always desirable. Some advantages and disadvantages of different strategies are given below. Whatever, SA is not a one-off activity but results should be continually reviewed as situations change.

Office-based SA by MPA staff

This is the cheapest, simplest and logistically least complicated way of carrying out an SA. However, the information possessed by such people is unlikely to do justice to the social knowledge possessed by other stakeholders and may lead to a glossing over of complexities. It also may lead to an analysis reflecting the interests/agenda of these people alone. These points should be considered when opting for this approach.

Participatory SA with a group of key stakeholders

Whilst more costly, logistically complex and requiring more facilitation skills than the office-based approach, this has the advantage of providing local perspectives on MPAs which are vital for understanding obstacles to change. However, it should be noted that in situations of great conflict, bringing stakeholders together could exacerbate the problem and also that participation does not automatically ensure a level playing field and can result in information that plays into the hands of the more powerful groups.

In either case research from Renard et al. (2001) on approaches in the Caribbean, suggests that stakeholder approaches will often require independent facilitation.

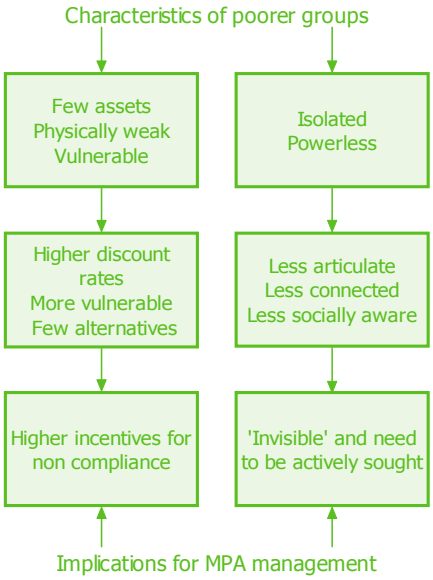
IDENTIFYING & ASSESSING STAKEHOLDERS

The special case of poorer groups

When doing an SA, the special case of poorer groups should be considered. Chambers (1983) identified five characteristics of poorer groups that have implications in the MPA setting and these are presented in the top boxes on the diagram on the right.

Characteristics in the right hand top box suggest that more than any other group, poorer users dependent on the marine resource will be less likely to be able to comply with MPA measures that affect their use of the resource. This is so **even if** they understand the reasons behind the measures and are supportive of the objectives in general. Short-termism and fewer alternatives may leave them unable to comply and such stakeholders must be identified early on in the SA.

The other set of characteristics (left hand top box) make identification of these groups more difficult. Such people tend to be 'invisible', with their views not being heard or being wrongly represented by other more influential people, frequently without their knowledge. A common example of this is the case of poorer fishers who are often represented by a richer, more powerful fisher who has little understanding of their particular constraints. When conducting an SA, it is important to pay special attention to these poorer groups, and if conducting a participatory SA, finding effective means of communicating with them. Renard et al. (2001) provide regional evidence of where failure to do so has caused problems, suggesting that paramount importance be given to identifying and communicating with these 'less obvious' stakeholders.



Communicating with local Haitians on Providenciales, Turks and Caicos

During recent research, those in the Haitian immigrant community were identified as stakeholders in the Princess Alexandra Land and Sea National Park. However, reaching such groups and getting their views was difficult as they did not speak the local language, and with some of them being illegal immigrants, they were very wary of talking to anyone perceived to be in a position of authority. After an unsuccessful attempt to talk with them in their houses, the local Haitian pastor was approached to act as an intermediary between them and the Park staff. Following discussions with the pastor, a meeting was set up with some local representatives from the community and was held in their local church. In a familiar environment and with the encouragement of a trusted individual (the pastor) the Haitians talked freely about their thoughts on the MPA and other constraints.

Meeting in a Haitian church arranged with the assistance of the church pastor. (Source: N. Esteban and C. Garaway.)

FINDING OUT MORE

Conducting further socio-economic research

If the results of the preliminary SA reveals that knowledge is incomplete, more field research may be required.

It is beyond the scope of this guide to describe field methods and this subject has been well covered elsewhere. A useful resource for conducting participatory socio-economic research is Bunce et al. (2000).

The manual suggests the types of information that can be collected and methods for collection. Examples of the kinds of information that can be collected are suggested in the table opposite.

Methods are described fully and their relative strengths and weaknesses discussed. Emphasis is given to visualisation techniques (for example techniques commonly associated with Participatory Rural Appraisal PRA) and other techniques that encourage stakeholder involvement, including that of poorer groups, in the research process. An example of such a technique, a historical trend matrix, is shown in the photograph below.

Parameters	Sub-parameters
Resource use patterns	Reef-related activities and changes over time; impacts on reef resources; who uses reef resources; means of reef-related activities; use rights; location of activities and stakeholders; timing and seasonality.
Stakeholder characteristics	Community characteristics; individual characteristics; livelihoods; gender differences.
Stakeholder perceptions	MPA management; conflicts among stakeholder groups; threats to the reefs.
Organisation and resource governance	Use and property rights; governance.
Market attributes for non-extractive uses of coral reefs	Market supply, demand, structure.
Market attributes for extractive uses of coral reefs	Demand for tourism activities.

Table from Bunce et al. (2000). This manual provides an informative and easy-to-read guide to collecting socio-economic data for coral reef management. It is currently being adapted for the Caribbean context (see Part 4).

Other useful references are suggested in Part 4.

Diagram drawn by fishers to illustrate how fish populations had changed over the last ten years, Engrail Marine Park, Jamaica. (Source: N. Esteban and C. Garaway.)

LOCALS & MANAGEMENT PROGRAMMES

Drawn from the data collected for Geoghegan et al. (2001) presented in Garaway and Esteban (2003). NB. For the question concerning presence of formal mechanisms for local involvement, no response was received from 14% of respondents. For the question that asked when in the process they were involved, there was no response from 22% of MPAs (n=80).

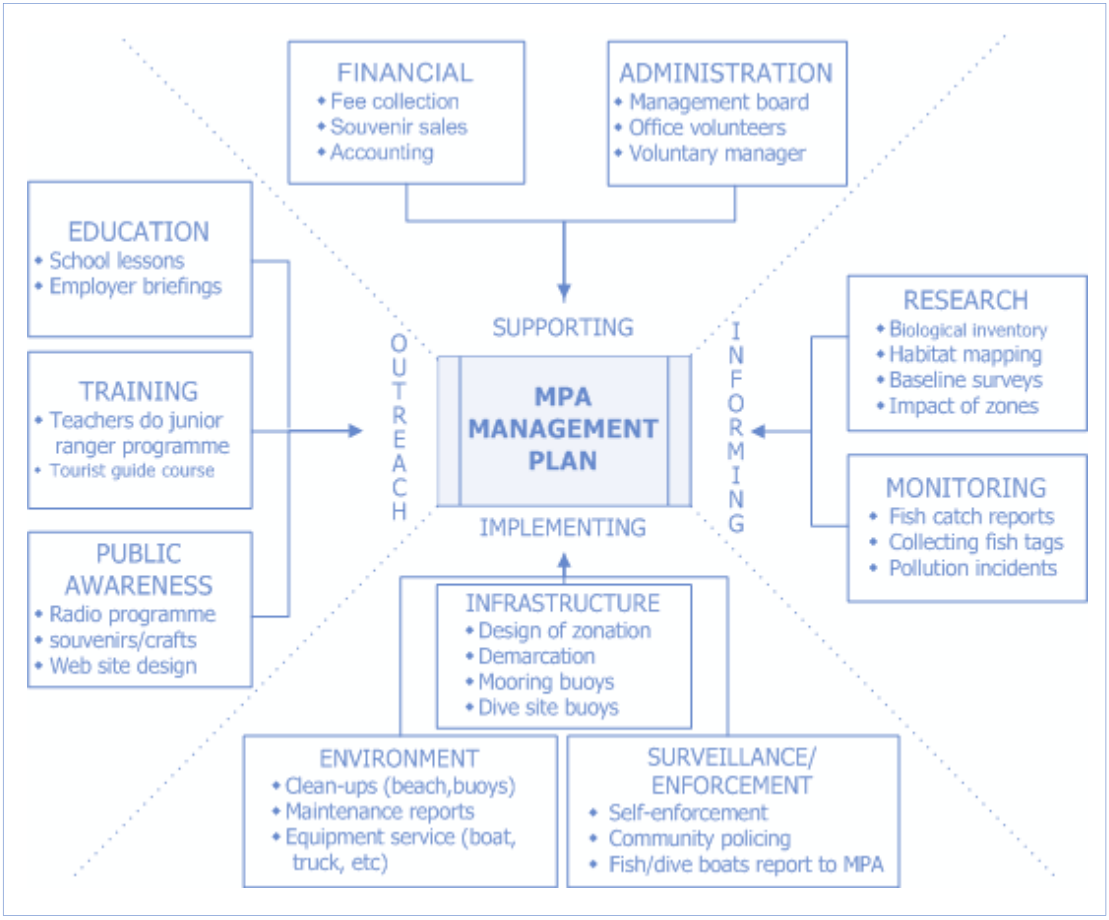
In a recent survey, 46% of Caribbean MPAs had formal mechanisms for local involvement. Only 10% involved stakeholders in the design/planning phase and 34% involved stakeholders in MPA operations.

Only 35% of Caribbean MPAs are meeting their management objectives (Jameson et al. 2002). The inclusion of locals in management is one of the major mechanisms for effectively improving MPA operations and, at the same time, enhancing activities within existing financial and human resource constraints.

The following diagram sets out a typical MPA management plan, which has been divided into four broad themes (as indicated around the central 'MPA management plan' box). The themes include: **supporting** the MPA (financial and administration), **informing** the MPA (research and monitoring), **implementing** principal activities (infrastructure, surveillance/enforcement and environment) and **outreach** activities (education, training and public awareness).

These four themes have been sub-divided into the main objectives of MPA management, as shown in individual boxes around the periphery of the diagram. The boxes highlight those activities where it has been shown that local people have been integrally involved in improving MPA management. Examples of these activities (based on experience in various Caribbean MPAs) are described in the table and case studies on the next page.

Typical MPA plan and management objectives based on the plans of Princess Alexandra Land and Sea National Park (Turks and Caicos), Glover's Reef Marine Reserve and Hol Chan Marine Reserve (Belize). The examples of local involvement under each objective are drawn from Garaway and Esteban (2003).



HOW THEY COULD BE INVOLVED

Beach cleaning programme Statia Marine Park, St Eustatius

The Atlantic coast provides a nesting beach for four species of endangered turtle, and islanders have been involved in monthly beach cleaning exercises to prevent entrapment of hatchlings in particular. Removal of plastics, materials (rope, clothing, etc) and other land - and sea-based debris takes place on a weekend afternoon. Clean-ups are advertised via schools and local radio, and on community notice boards. Transport to the beach, and removal of debris to the landfill site, is arranged by the marine park, with assistance from school and church groups and dive operators. Results of clean-ups are published in the local newspapers.

Source: N. Esteban, St Eustatius Marine Park, Nether-lands Antilles.

Management objective	MPA/activity
Sustainable financing	Princess Alexandra Land and Sea National Park (Turks and Caicos): the Park is financed by a national conservation tax charged and administered by local hotels/ guest houses.
Public awareness	Sian Ka'an Biosphere Reserve (Mexico): works with local craftsmen who sell marine conservation souvenirs within the Reserve.
Infrastructure	Tortugas MPA (Florida, USA): users from all sectors were represented in the Working Committee that designed the boundaries of this MPA.
Surveillance/ Enforcement	Negril Marine Park (Jamaica) has aided establishment of community wardens to patrol the replenishment zones where fishing is banned.
Training	Negril Marine Park (Jamaica): trains teachers in marine conservation. Teachers then assist, and help lead, the junior ranger programme.
Education	Princess Alexandra Land and Sea National Park (Turks and Caicos): informs hotel management who in turn brief their employees in objectives and activities of the MPA.
Administration	Hol Chan Marine Reserve (Belize): a Trust Fund Committee directs the MPA and is composed of representatives from the fisheries co-operative, local tourist guide association, Chamber of Commerce and local environment NGO.

Examples of activities crucial to the MPA where local people are involved. (Source: Esteban and Garaway, 2002; Garaway and Esteban, 2003.

Fishers involved in research and monitoring, Glover's Reef Marine Reserve, Belize

Research programmes conducted by the Wildlife Conservation Society (WCS) through its field station on Glover's Reef have involved fishermen in various ways. During the early stages of the development of the Marine Reserve, a study was initiated to monitor fisheries catch in order to compare differences prior to, and after, the reserve establishment. Fishermen were intimately involved in this data collection process, by recording their catch on special data forms. Although this study was not concluded due to various reasons, it is hoped that a similar catch data collection system will be started on the Atoll in late 2003.

During research investigations on the Nassau grouper and its spawning aggregation, fishermen have been hired to assist with the fish tagging. Similarly, shark researchers have hired experienced local boatmen and fishermen to assist with the capture of sharks for tagging. A subsequent fish tagging study designed to assess whether or not the Marine Reserve was effectively protecting finfish resources has also involved fishermen, who have been requested to return the tags. Fishermen were an invaluable asset to the project as they helped to design and build the fish traps for the study, and shared their knowledge of the Atoll's fish populations with the researchers.

Source: Janet Gibson, WCS, Belize.

SOME RESULTS OF LOCAL INVOLVEMENT

The previous page suggested ways in which local people could be involved in MPA management. Some of the benefits of this involvement are immediately obvious - below are a list of benefits that an effective partnership with local communities can bring. As mentioned previously, building such a partnership requires effort on the part of the MPA agency and much of the rest of this guide discusses ways in which the cooperation of local people can be earned.

Overview of benefits of local involvement

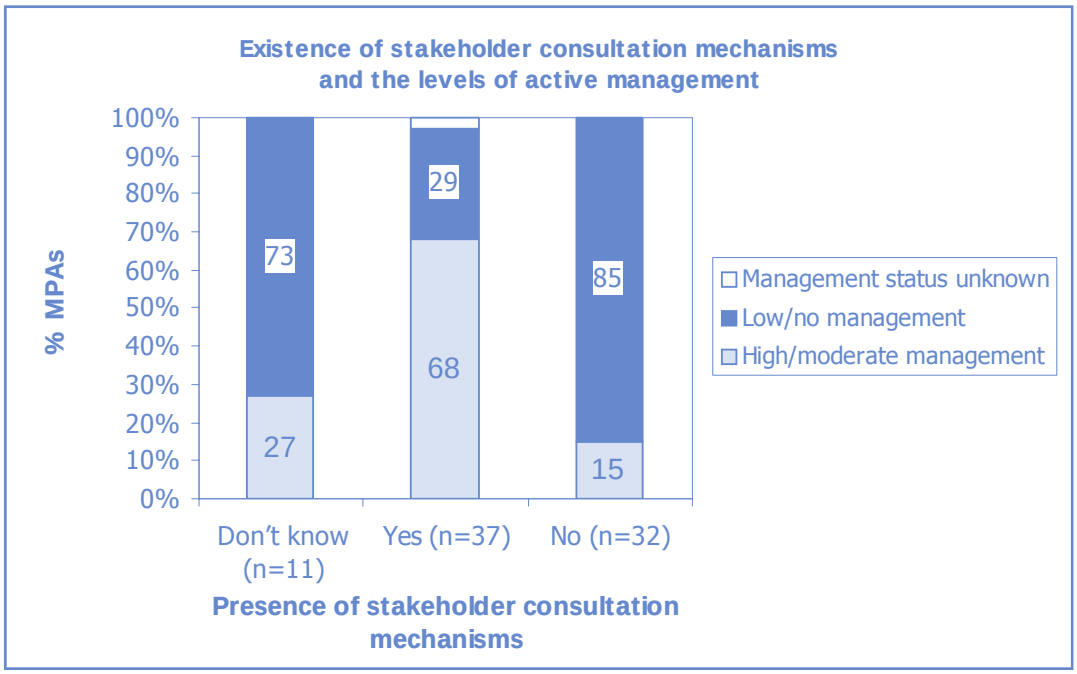
List adapted from Kelleher (1999).

- Management is more effective as it harnesses local knowledge and skills.
- Regulations can be better adapted to local socio-economic conditions and therefore more acceptable to local resource users.
- Costs of monitoring and enforcement are reduced, because of more appropriate regulations, voluntary compliance or self-enforcement.
- Management responsibilities are shared, lessening the burden of the MPA agency.
- Alliance between MPA agency and local stakeholders can fend off resource exploitation from outside interests.
- Trust is increased between the parties leading to greater commitment to implement joint decisions.
- Problems and disputes are less likely due to the increased understanding and knowledge among all concerned of the views and positions of others.
- Public awareness of conservation issues increases.

Evidence from our research

The graph below shows the management status of 80 MPAs in the Caribbean collected from survey data (for definition and categorisation see Geoghegan et al. 2001) organised in terms of whether they had local stakeholder consultation mechanisms in place or not. As can be seen, places where there were means for the local community to be involved had a correspondingly high incidence of high/ moderate management (68%). Conversely, where there were no mechanisms, incidence of high/moderate management was low (15%).

Created from the data collected for Geoghegan et al. (2001) presented in Garaway and Esteban (2003).



KEY LEARNING POINTS (Part 1)

- The viability of protected areas is often undermined by non-compliance, bad practice or lack of co-operation by local people. This can often be fuelled by local resentment of an MPA's existence.
- Under such conditions, local actions can lead to many types of chemical, physical and biological degradation.
- Evidence shows that there is a significant amount of conflict amongst MPA users, and non-compliance, throughout the Caribbean region and that this is, therefore, a widespread issue.
- This is only one problem area affecting the effectiveness of MPA management but solving it can have a knock-on effect on resolving others. For example, good co-operation can decrease agency monitoring and enforcement costs thus decreasing financial constraints; or, it can lead to better local technical knowledge, thereby improving ecological design.
- To address these issues, you must know who your stakeholders are. Stakeholder analysis is a start and is a process that should be repeated as situations change.
- Frequently, the MPA agency will not have the necessary information at its fingertips to carry out a detailed stakeholder analysis. More information may be required and there are well documented means of acquiring this.
- In many cases, MPA use has a poverty dimension. Research suggests that, more than any other group, poorer users will be less likely to be able to comply with MPA measures due to their necessarily short-term perspectives and access to fewer alternatives. These people must be identified and an understanding of their livelihoods, and associated constraints, developed.
- This is made more difficult by the 'invisibility' of poorer groups, who are frequently less articulate, less well connected, represented unknowingly by others and/or less socially aware. Special strategies may need to be developed for establishing connections and developing communication channels.
- There are many good examples throughout the Caribbean of local involvement in management programmes. Examples can be found for all activities that will normally comprise a management plan, such as supporting, implementing, informing and outreach. Local involvement can be a tremendous resource that should be tapped.
- Known benefits of local involvement have included the following:
  - Local knowledge and skills harnessed
  - Rules better adapted to local socio-economic conditions
  - Monitoring and enforcement costs reduced
  - Management responsibilities shared
  - External exploitation deterred by local alliance
  - Trust and commitment engendered
  - Problems and disputes reduced or more resolvable
  - Public awareness of need for conservation increased.

WHAT CAN MPAs DO FOR LOCAL PEOPLE?

Roberts and Hawkins (2000). p.79.

"The most successful reserves are those where benefits of reserve creation are fed directly back into local communities and help compensate those whose livelihoods have been adversely affected"

Types of assets that contribute to local people's livelihoods

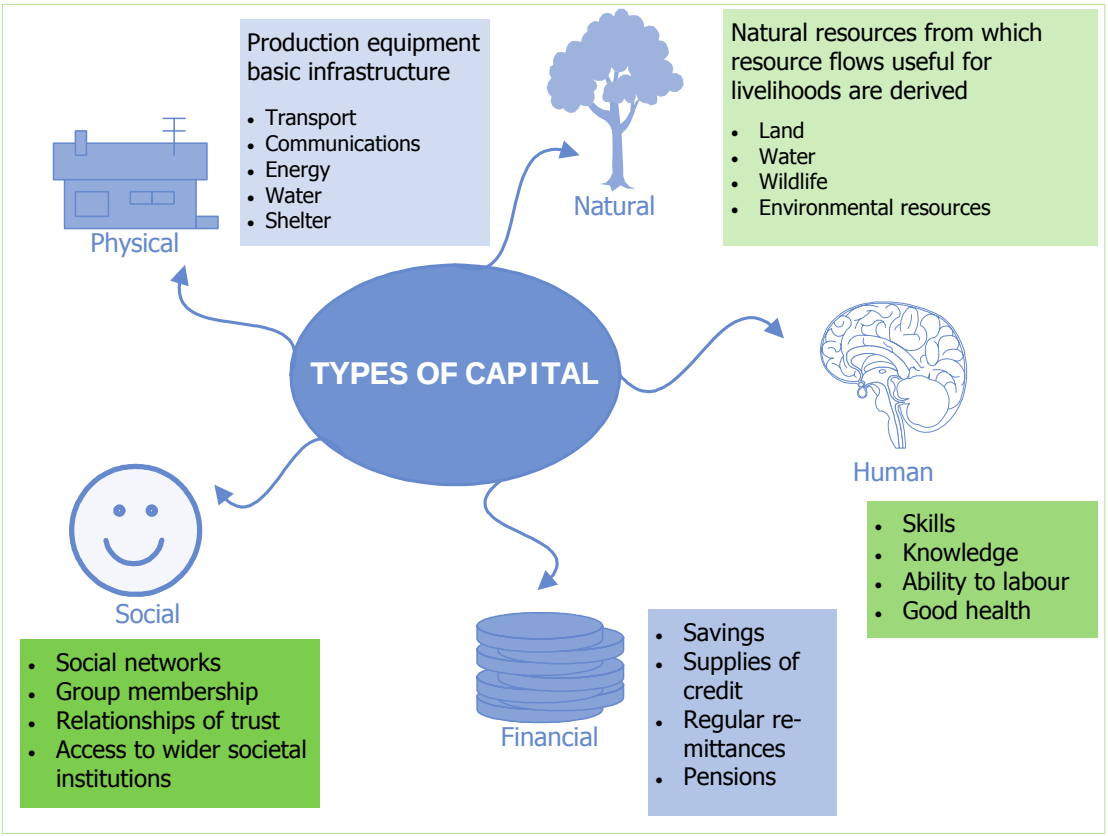
The diagram below shows five types of capital (assets) that have been recognised as important for sustainable livelihoods. These are classified here as: Natural; human; financial; social; and physical.

MPAs are generally set up to improve/ protect/sustain the marine environment and hence it is perhaps obvious that MPAs can have a role in improving local people's natural capital (that is, if they are not excluded from it, or from the benefits associated with its improvement).

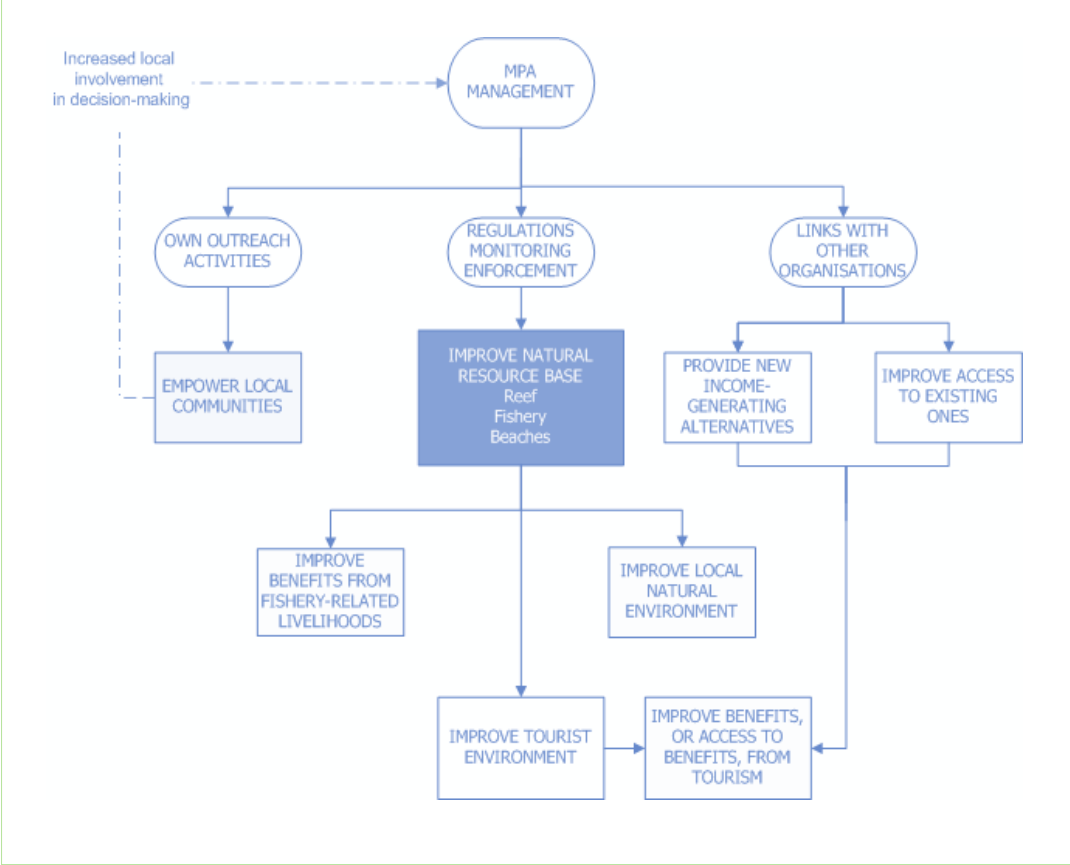
Frequently, tourism is enhanced by the presence of an MPA, hence it is clear that an MPA can improve the financial capital of local people in the tourist sector (again, that is, if they are able to gain access to it).

However, there are less obvious ways that an MPA can contribute to local people's livelihoods and an overview of the types of benefit an MPA can bring is presented on the next page. These types of benefits span all the types of capital mentioned below. The diagram details the main potential areas, based on experiences gained from our detailed case study research. Each area is then discussed individually in more detail on the following pages.

A representation of the types of capital that form part of the Department for International Development (DFID's) sustainable livelihoods framework. For more information see Carney (1998).



AN OVERVIEW



Potential benefits as identified from our detailed case study research, Garaway and Esteban (2003).

Overview of benefits an MPA can provide

In the diagram above, the top boxes indicate common MPA management activities. Regulations, and the monitoring and enforcement of them, will hopefully lead to an improvement in the natural resource base, often a principal aim of an MPA and given priority as the central box in the diagram. Achieving this will not, however, lead automatically to an improvement in local people's livelihoods. This will depend on the type of regulations in place and the other activities of the MPA agency.

With regulations sensitive to fishers' needs, or the provision of alternatives when total restrictions are necessary, fishers' livelihoods can be sustained/improved in the shorter term whilst waiting for the longer term spill-over effects or resource improvement to occur - see p.18-19. General improvement of the natural resource base will lead to an improved natural environment for tourists and locals. Local benefits of this might include improved infrastructure or recreational areas (physical capital) or improved health and safety (human capital) - see p.20-21.

An improved natural environment is likely to be a boost to the local tourist industry, and an MPA can alone, or commonly by linking with other relevant agencies, advocate and promote local involvement in this. This could be through improving access to existing opportunities or by providing new ones - see p.22-25.

Finally, the **way** an MPA works can serve to empower local communities. For a definition of empowerment (a mix of social and human capital) see p.26-27. Education is one aspect of empowerment, but also included is group/individual capacity building and organisational strengthening. Specific outreach activities, or an inclusive participatory style of management generally, can have the additional benefit of increasing a local community's ability (and desire) to be involved in MPA management, thereby improving its effectiveness - see p.32-33.

IMPROVING FISHER-RELATED LIVELIHOODS

Evidence of fishery benefits

As argued by Roberts and Hawkins (2000), there is "compelling, irrefutable evidence that protecting areas from fishing leads to rapid increases in abundance, average body size, and biomass of exploited species", (p.17). The table below presents some of the evidence for a selection of reserves within the Caribbean.

Examples taken from Roberts & Hawkins (2000) Table 1 p.19. - except for Discovery Bay example taken directly from source.

Reserve name & location	Years of protection	Habitat type	Effects reported
Exuma Cays Land and Sea Park, Bahamas	36	Tropical seagrass meadow	The average density of adult queen conch was 15 times higher in the reserve (Stoner and Ray, 1996).
Saba Marine Park, Saba, NA	4	Coral reef	In the no-take zone the biomass of target species was over twice that in fishing grounds (Roberts and Polunin, 1993).
Hol Chan Marine Reserve, Belize	4	Coral reef	Biomass of target species in the reserve was on average double that in fishing grounds, whilst in certain parts of the reserve it was ten times greater (Roberts and Polunin, 1993; Roberts and Polunin, 1994).
Discovery Bay, Jamaica	2	Coral reef	Within two years of the Reserve, fishers perceived increases in abundance, and studies showed that the reserve delayed age and size at recruitment to the fisheries and enhanced catches in adjacent waters (Woodley et al. in press).

Benefits to fishers and the importance of perception

Despite the benefits above, benefits in the fishery do not automatically translate into benefits for the fishermen. On the contrary, fishermen, frequently from the poorer sectors of the community, are often displaced when an MPA is created and, in the short term at least, negatively impacted upon.

For more information, see Garaway and Esteban (2003).

Of all stakeholder groups spoken to during our case study research, it was fishers who most frequently felt that they were paying the costs of MPA implementation whilst others (most notably the tourism industry) were reaping the benefits. This seriously affected the fishers' perceptions of the MPA, creating resentment and distrust of MPA aims, and ultimately, less willingness to comply with fishing regulations.

An education and public awareness programme can go some way to informing fishers of aims and fishery status, but without already developing their trust and interest such efforts may fall on deaf ears.

The table on the following page shows results from our case study research investigating: fisher perceptions of MPA impact; management measures put in place to address fishers' needs; and perceived levels of compliance with MPA regulations. An additional case study from the literature, Discovery Bay, Jamaica has been added. For two of the MPAs (Hol Chan and Discovery Bay), independent research on actual fishery status is presented in the table above.

Only results for the commercial fishermen are presented here and these have not been disaggregated. For more detailed discussion on the perceptions of different types of fishers, including non-commercial fishers, see Garaway and Esteban (2003).

Compliance levels varied, as did the management measures in place to address fishers' needs. Generally, however, those with more fisher-related management measures in place had higher compliance, even when not all of the impacts of the MPA on fisher livelihoods were perceived by the fishers to be positive.

	Management measures					Outcomes			
MPA	Fishing zone within MPA	Fishers involved in making regulations	Strong local organisations representing fisher interests	a) Alternative options or b) fishing areas	Continuous dialogue & education	Fishers' perception of impact of MPA on fishing livelihood			Compliance
						-ve	zero	+ve	
HCMR	√	√	√	√a,b	√	*		*	High
NMP	√	√	x	√ b (now) X (planned)	√	(***)	*	*	Moderate/ High in some areas
PALSNP	x	x	x	√b	x	*	*		Low/ Moderate
GRMR	√	x?	x	√b	x	***		(**)	Low
DBFR	x	√	√	√a,b	√	?	?	?	High initially

Key: * = minimum
*** = maximum
( ) = perception of future impact

HCMR - Hol Chan Marine Reserve, Belize; NMP - Negril Maine Park, Jamaica
PALNSP - Princess Alexandra Land Sea National Park, Turks and Caicos
GRMR- Glover's Reef Marine Reserve, Belize; DBFR – Discovery Bay, Jamaica

All results in the table, apart from those for Discovery Bay Fisheries Reserve (DBFR) Woodley et al. (in press) come from our own case study research presented in Garaway and Esteban (2003).

Results show that the most common management measures (zoning, and ensuring alternative and equally good fishing areas outside the MPA) were not sufficient to ensure compliance, as low compliance occurred even where these were present.

What did appear to make a significant difference (in HCMR, DBFR and in some nursing areas of the NMP) was fishers' involvement in crafting the regulations. This greatly increased the perceived **legitimacy** of regulations, whilst absence of fisher involvement had the opposite effect (GRMR, PALSNP). The presence of strong local organisations (such as the fisher co-operatives in Hol Chan) also ensured that fishers' needs were fully considered. Along with continuous dialogue and education, such involvement also led to fisher empowerment, a subject returned to on p.26. The presence of alternatives where fishing was restricted was also crucial, and this is discussed again on p.22-25.

Fisher benefits at Discovery Bay, Jamaica

Abstract from Woodley et al. (in press).

The Fisheries Improvement Programme (FIP) began in 1988 to help fishers at Discovery Bay counteract over-exploitation of the north coast coral reef stocks. At the time social and cultural constraints included poverty and distrust among fishers. FIP initiated:

- An education programme in reef fisheries and the possibilities of local management.
- Encouragement of a Discovery Bay Fishermens' Association who agreed on a voluntary protected area within Discovery Bay in 1994.
- A reserve Planning Group representing all members of the bay.
- Contract with Fishermens' Association and transfer of grant funds to it.
- Marking of the Fisheries Reserve and daily patrols from 1996.
- Legalisation of the reserve, which was not obtained.

Results are described in the table on p.18, showing that both the status of the fishery and the perceptions of the fishers were positive. However, the failure to gain legal status, and lack of funds to maintain patrols after 1999, led to a decline in compliance with voluntary restrictions on fishing. These types of constraints are discussed again on p.34-35.

IMPROVING HUMAN WELFARE

Sustainable management of natural resources ultimately leads to an improvement in the environment in which the local community live, and this is referred to here as an improvement in 'human welfare'.

These improvements can lead to improved human health and safety, access to facilities or services or purely providing a sense of increased mental well-being. As such, changes in human welfare can improve both human and natural capital (see p16-17).

Changes in human welfare may arise through improvement of existing natural resources (e.g. reduction of point source pollution), provision of facilities or infrastructure within the MPA (e.g. demarcation of swimming zone) or, alternatively, by addressing degradation of the environment (e.g. promoting the construction of a sewage treatment works). The table below gives examples of ways that MPAs have been shown to have improved human welfare.

MPAs often have an indirect or apparently 'invisible' role in achieving improvements in human welfare, particularly when an MPA is bordered by a large settlement (such as Soufriere Marine Management Area (SMMA), St Lucia or Montego Bay Marine Park, Jamaica) and when its work is integrated within programmes of other governmental departments or sectors.

Many of the examples below have clearly resulted from direct actions of an MPA. On the other hand, despite their involvement, the role of MPAs is not always so obvious. In the construction of public sewage works (which occurred in Negril, Jamaica) or the creation of a craft market (Princess Alexandra National Park, Turks and Caicos), initiatives are usually led or funded through other governmental sectors. In these cases, it is extremely important that MPAs effectively communicate their involvement in these activities to local populations. Methods of communication are discussed in more detail on p.38.

INFRASTRUCTURE

- Beach access ways
- Demarcation buoys
- Mooring buoys
- Community project fund for beach facilities
- Visitors' Centre provides meeting place
- Designated fishing village
- Creation of craft market

PUBLIC SERVICES

- Waste treatment systems
  - Public sewage works
  - Private sewage works
  - Small scale (latrines, septic tanks)
- Recycling (composting, bags)
- Road construction and maintenance
- Communication networks (e.g. antenna for radio systems)

PUBLIC HEALTH AND SAFETY

- Pollution
  - monitoring of incidents
  - reports to authorities
  - control mechanisms
  - beach cleaning
- Safety zones:
  - swimming zones
  - boat entry lanes
  - jet ski/motorcraft zones

IMPROVED MENTAL WELLBEING

- New recreational facilities
- Sense of pride in local natural heritage
- Recreational fishing
- Cleaner, tidier environment

Different ways to improve the human environment in and adjacent to an MPA. In this table, examples are drawn from case study material (see Garaway and Esteban, 2003).

The town of Soufriere lies at the mouth of the River Soufriere and along the boundary of the SMMA. Activities impacting on the marine environment include agriculture, aquaculture and tourism developments. (Source: N. Esteban.)

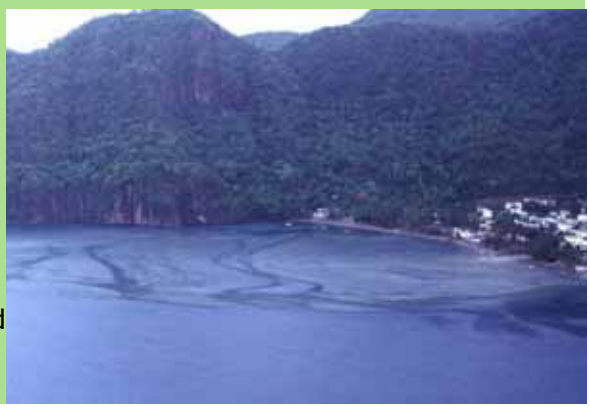
Sedimentation endangers reefs at SMMA

Over the past decade, reefs in St Lucia have been exposed to a growing quantity of sediments and nutrients entering the sea. The amount of mud reaching the sea has been closely correlated to development on land. In 1996, heavy rainfall on the island caused so much sedimentation that it had to be removed from sponges by hand. Recovery from events like this has been slow and sedimentation impacts badly on fishing and tourism (Nugues et al., 2002).

With support from the Department of Fisheries and the SMMA, sediment traps have been deployed throughout the SMMA to measure rates of sedimentation. SMMA rangers monitor traps and take underwater visibility measurements and a local dive centre records daily rainfall. Results from this work show a clear negative effect of mud on the amount of coral present. Any further increase in sediment inputs from developed land will cause further loss in coral cover and there is an urgent need to control sediment and nutrient inputs. Land clearance on shorelines and close to rivers should be undertaken only with a full appreciation of the harmful effects of such activities on coral reefs.

Information is extracted from the SMMA website and reports on research by Callum Roberts, University of York, UK (DFID NRSP project R7668).

There is a great deal of awareness of the problems of soil and fertility loss in the Department of Agriculture in St Lucia and there are ongoing demonstration projects aimed at developing better farming and soil conservation practices, including improved soil conservation by farmers, crop diversification, reduced cultivation of steep slopes and marginal soils. SMMA research outputs have complemented ongoing activities by the Extension Services of the Department of Agriculture by providing them with information on the downstream impacts, both biological and economic, of soil loss on the marine environment. The department has been able to use this information in arguments to strengthen and expand ongoing programmes to prevent soil loss.



Sediment originating from Soufriere Valley pours onto shallow reefs in the SMMA after a heavy rainfall (Source: C. Schelten.)

INCREASING ACCESS TO TOURISM BENEFITS

For documentation on the benefits of MPAs to tourism and how to develop sustainable tourism, see Part 4.

It is well recognised that the presence of an MPA can bring benefits to the tourist industry and many have been set up with this as an aim. The case of Hol Chan, opposite, is a good example of these benefits. Hol Chan is also a good example of tourism development that benefits the **local** community, a situation that is less common, despite the fact that it is frequently proposed as an industry that will offset negative impacts on traditional livelihoods. In contrast, local communities can suffer adverse consequences of tourism, whilst at the same time be unable to gain access to the industry and its benefits. This is particularly true for poorer sectors of the community. If MPAs are associated with tourism development that benefits 'outsiders' at the expense of 'locals', support will not be forthcoming. The table below shows some of these problems, as identified by local communities in our case study research.

For more information see Garaway and Esteban (2003).

MPA	Adverse consequences of tourist development	Factors constraining access to industry and its benefits		
		Employment in tourism sector	Market for goods in tourism sector	Self-employment in tourism sector
PALSNP	• Sense of loss of ownership of beaches • Raised property values/ cost of living	• Foreign ownership • In-migration from nearby islands • Low wages • Language & eligibility for work permits (non-native islanders)	• All-inclusive hotels stop tourists leaving hotel compound	• All-inclusive hotels • Cost of permits/ licences • Eligibility for permits/licences
NMP	• In-migration • Littering/crime	• In-migration	• Little market for local commercial species (fishermen) • Little market for organic produce (hillside farmers)	• Costs of permit fees and licence fees (e.g. watersports operator/ restaurateur)
HCMR	• Increased crime	• Lack experience and language (mainlanders)		• Cost of licences (tour guides)

PALSNP - Princess Alexandra Land and Sea National Park, Turks and Caicos;
NMP - Negril Marine Park, Jamaica; **HCMR** - Hol Chan Marine Reserve, Belize.

For information about new initiatives in PALNSP see Garaway and Esteban (2003) and p.25.

Of all the case studies, local benefits from tourism were by far the most restricted in Turks and Caicos. Both the native islanders and immigrant populations had significant problems accessing the industry, whilst the nature of the industry was bringing social and economic costs. For immigrant populations, restricted access was linked to an inability to get work permits and being paid extremely low wages. For the native islanders it was related to being squeezed out of the lower end of the market by the availability of cheap immigrant labour and at the higher end by the all–inclusive nature of the vast majority of hotels on the island, which kept the tourists in the hotels, and their money in the hands of the predominantly expatriate hotel owners. PALSNP, with few outreach activities and links with locals had not been active, until recently, in trying to reverse any of these trends.

In Negril, there was more local ownership of tourism businesses, and accessing the industry was easier. Minimum wages also protected nationals. The NMP was also committed to developing linkages with the local community and improving their access to the industry (see p.24).

Despite this, a survey of employees of seven Negril hotels (480 employees) showed that only 3% actually came from Negril (CARECO, 2001 p.29). New initiatives (such as organic farming) were also hampered by a lack of local tourist market support. Fishers reported similar problems.

& DECREASING ADVERSE EFFECTS

Tourism and the Hol Chan Marine Reserve

Photo. Zone A: The Hol Chan Channel. (Source: M. Alamilla, HCMR Manager.)

Ambergris Caye is the largest and northernmost island along the Belize Barrier Reef. San Pedro Town is the only established community on the Caye and it has been transformed from a small fishing village into a major tourism destination. Today, the Marine Reserve, spanning from the coral reef to the southern tip of Ambergris Caye is a major attraction, with the Hol Chan Cut, the recreational area of the reserve, becoming one of the most popular snorkelling and dive sites in Belize. The Marine Reserve is divided into four zones to provide an area that facilitates sustainable use of the resources for all stakeholders. This management scheme allows the designation of an area under full protection while leaving others more flexible by excluding destructive fishing practices and promoting activities such as sport fishing and traditional commercial fishing. Tourism has already had a substantial beneficial impact on the local community, raising the standard of living of San Pedrans generally. How this was achieved is discussed below.

Facilitating factors

- The locals themselves drove tourism. Almost all hotels and restaurants on the island are family run and there are few large resorts. The lack of all-inclusives also increases access for small businesses. In addition, immigrants from the mainland are not taking jobs away from locals, who, in the main, have already found their niche in the tourist industry.
- There is a national legal requirement for tour guides to be Belizean, preventing overseas developers from bringing in their own staff.
- The fishery was in rapid decline when tourism started, encouraging 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.
- The presence, 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) who protect the interests of their members well.

The MPA specific role

- Protecting the natural capital upon which tourism (to a certain extent) depends.
- Significant role in marketing the reserve as a tourist attraction.
- Built social capital on the island during its emergence (in terms of reducing conflict, bringing different stakeholders together) in a way that encouraged local initiative.
- Increased environmental awareness and encouraged sustainable tourism development.

Information provided by Miguel Alamilla and taken from Garaway and Esteban (2003).

What can MPAs do?

Many of the problems linked with tourism do not, at first glance, appear to be within an MPA agency's remit. However the example of Hol Chan, and others, shows that such agencies are in a key position to positively influence the situation, whether it be through increasing local people's capacity to self-organise (as in the case of HCMR), by putting pressure on the government or tourist industry, by developing initiatives themselves or in association with others, or by providing formal and informal linkages between different stakeholder groups. A list of possibilities therefore includes:

- Being aware, and promoting awareness, of adverse consequences and access problems.
- Helping local people to self-organise (capacity building, local organisational strengthening, building linkages and communication networks between locals and industry).
- Lobbying (improved legislation, sustainable tourist development, improved access to credit)
- Developing or become actively involved in local initiatives (e.g. training and employment of local guides, distribution and sale of local crafts and produce). See p 24-25.

PROVIDING ALTERNATIVE OR ADDITIONAL

These pages present examples where MPAs have individually, or with other local organisations, **actively** attempted to address the issue of providing additional or alternative livelihoods for local people whose traditional activities have been affected by the MPA.

Fishers are the most common user group to be targeted for this type of assistance - unsurprising given that they are frequently the groups most obviously displaced - and several examples of specific fisher initiatives are provided in the boxes below. Alternatives can be crucial. For example, there is no doubt that the presence of alternatives in the tourist industry was fundamental to high levels of fisher agreement in the Hol Chan Marine Reserve (see p.19 & 23), and ultimately, therefore, its success.

Some agencies have recognised the need for others in the community to benefit from an MPAs presence, and have 'community development' as part of their management plan. Some less fisher-specific initiatives are presented opposite.

Alternatives or additions to fishing

MPA	Initiative	Stage of initiative/ Outcome	Source
GRMR	Employment as researchers	Successful though employs few and only a seasonal activity.	See p.13
NMP	Gear exchange programme	Successful. Fishermen in one village had voluntarily exchanged their gears within six months of commencement of the programme.	See p.29
NMP/DB	Irish moss farming	See below.	See box below
DB	Floating cage culture	Research conducted but technology not yet transferred.	Woodley et al. (in press)
DB	Helping locals fish offshore	Not yet successful as original replacement gears were stolen.	Woodley et al. (in press)
DB	Watersports industry	Park helped a few fishers interested in diving to gain access to the industry.	Woodley et al. (in press)
HCMR NMP	Tour guiding	Successful in HCMR with many fishers switching to guiding. In NMP not so. Attempts to get fishers involved in river guiding were never fully developed.	See p.23
SMMA	Water taxiing	Successful and now a recognised occupation that has become legitimised and organised.	Brown et al. (1997)

Key: **GRMR** - Glover's Reef Marine Reserve, Belize; **NMP** - Negril Marine Park, Jamaica; **DB** - Discovery Bay Fisheries Reserve, Jamaica; **HCMR** - Hol Chan Marine Reserve, Belize; **SMMA** - Soufriere Marine Management Area, St Lucia.

Irish Moss culture, Discovery Bay

In Discovery Bay, male and female members of the fishing community were trained in Irish Moss culture. However there was little interest from the fishermen, and only a few women followed it up. Those involved suggest that "any form of mariculture, which resembles farming more than fishing, and carries continuous responsibility for maintenance, would be perceived as imposing a less attractive lifestyle, and one that for a fit young man, would probably be less rewarding, financially, than spear or net fishing" (Woodley et al. in press p.9) They end by suggesting that the future for local algal mariculture may lie with the women.

These problems highlight the often suggested idea that, for some, fishing is a lifestyle choice as well as a financial occupation and therefore not so easily exchangeable. Cultural norms must be considered.

For more information see Woodley et al. (in press).

LIVELIHOOD OPTIONS

Organic farming in Jamaica

This was being promoted in the Negril area, with the involvement of Negril Marine Park, to address the impacts of land-based environmental degradation on the marine environment. Despite some success, product marketing was seen as a significant constraint (by farmers and organisations alike) with much food going to waste. A recent study (CARECO, 2001) recommended continued support for this initiative but believed chances of success would be increased by having marketing specialists on staff.

Micro funds in Belize and Turks & Caicos

Communities living around MPAs in both countries have recently been given the opportunity to apply for small grants to, amongst other things, improve their own livelihoods in a sustainable fashion. (Micro-projects Programme in Turks and Caicos - 2001, COMPACT in Belize - 1st applications 2002). Whilst too early to judge their success, early problems in Turks and Caicos have included:

- Advertising not reaching poorer groups.
- Lack of skills, in community, to develop proposals and lack of links with community development organisations to help with this.

Information from Garaway and Esteban (2003).

Eco-tourism in Mexico

Amigos de Sian Ka'an, a non-profit organisation overseeing activity in the Sian Ka'an Biosphere Reserve, is working to integrate the goals of resource conservation with the social and economic needs of the local Mayan community (though eco tours and low-impact development projects). Specific initiatives include:

- Training Mayan guides for eco-tours.
- Working with rubber-tappers to develop a programme to make and sell natural chewing gum as souvenirs.
- Marketing traditional Mayan handicrafts.

Sian Ka'an is only 1/3 marine-based but many lessons can be drawn from its experiences. Recommendations included:

- Understanding local community needs.
- Community exchange as a mechanism for inter-village communication and learning, and for local communities to appreciate the scope for alternative livelihoods.
- Allowing time for capacity building.
- Getting funders involved at the 'sales' end of projects and using national/local festivals to develop markets.
- Developing co-operatives.
- Improving local infrastructure for tourism.

Information collected during discussions at the 57th annual GCFI Conference, Xel Ha, Mexico 2002. See also Esteban and Garaway (2002).

Photo: Mayan Guide training. (Source: Sian Ka'an promotional material).

Lessons learned

Examples on these two pages illustrate that developing alternatives requires time, financial resources and also skills that are not always part of an MPA agency's portfolio. Detailed stakeholder analysis and social/economic assessment (see p.8-11) would be essential as would expertise in community liaison/ development and marketing. Apart from economic feasibility, issues such as social/ cultural acceptability and marketing potential must be addressed. Other local agencies may have such skills and, in such cases, linkages should be sought. Given its complexity, these issues **must** be given more consideration at the MPA planning and design phase as opposed to, as is more frequently the case, being dealt with after the event. Examining the true costs or feasibility of providing alternatives early on could lead to a more realistic assessment of whether it is possible to restrict traditional use, or what extra resources are required if it is to go ahead. Involving local people in such an exercise would increase chances of workable and locally specific solutions.

COMMUNITY EMPOWERMENT

What do we mean by community empowerment?

Empowerment, as we use it here, is concerned with the capacity building of individuals and/or the community to increase:

- Social awareness.
- Autonomy over decision-making.
- Balance in community power relations.

Enabling them to gain better control over the utilisation and management of the physical, social, financial, human and natural capital (see p.16) that make up their livelihoods.

Empowering activities could include:

- Increasing access to information and services.
- Increasing community participation in decision making.
- Strengthening local community based organisations or creating new ones.
- Consciousness raising.
- Business and enterprise management skills.
- Reducing conflicts.

Importance of community empowerment in the context of MPA management

Community empowerment is a key aspect of improving MPA effectiveness through working with, and for, local communities and it links Parts 1, 2 and 3 of this guide.

Part 2 looks at ways MPAs can benefit local communities, and by enabling them to gain better control over their livelihood assets, empowerment activities are certainly one way of achieving this. However, as well as being an end itself, such empowerment is a powerful means of increasing MPA effectiveness as one of the livelihood assets of local communities are the resources the MPA is trying to protect. Empowering local communities to gain better control over the utilisation and management of these resources, by getting them more involved in MPA management and decision-making can benefit the MPA (as presented in Part 1).

***Co-management** can be defined as a partnership arrangement in which government, the community of local resource users, external change agents, and other resource stakeholders share the responsibility and authority for making decisions about management of the MPA.*

Such systems of co-management are being increasingly advocated within the Caribbean region and an example of one commonly cited as a successful case is presented opposite. Capacity building and community involvement in management is a long-term process (the example opposite occurred over ten years), it can be costly, risky, often not sustainable, and often not successful. However, as stated by Geoghegan and Barzetti (1994) "Most resource managers now believe that effective conservation is only possible with the full co-operation of local communities". Given the importance of community involvement in management, Part 3 of this guide is devoted to how it can be engendered. Here, some results concerning community empowerment from our own case study research are presented.

Examples and results from our research

For full details including the specific activities and outcomes at each site see Garaway and Esteban (2003).

In detailed case study research at four MPA sites (Negril Marine Park, Jamaica; Hol Chan Marine Reserve, Belize; Glover's Reef Marine Reserve, Belize; and Princess Alexandra Land and Sea Park, Turks and Caicos), it was found that all MPAs engaged in activities that could lead to community empowerment but some were more successful in achieving it than others. Comparative analysis of successful/less successful outcomes led to a list of suggested key facilitating/ constraining factors. These are presented on the next page and discussed in more detail in Part 3 of these guidelines. Specific initiatives included:

a. Information, education services, consciousness raising.
b. Participation in decision-making.
c. Encouraging involvement in operational activities/creating sense of ownership.
d. Reducing conflict.

A case of co-management - SMMA, St Lucia

At Soufriere, competing users of the coastal resources, particularly the fishing and tourism industries, were exerting pressure on the coastal and marine resources and evidence of habitat and resource degradation were emerging. The government's first response in 1986 was to declare some areas as Fishing Priority Areas and some as Marine Reserves but regulations were largely ignored and tensions persisted amongst users.

In 1992 a process of participatory planning and negotiation was organised by the Department of Fisheries, CANARI and the Soufriere Regional Development Foundation. This involved a complex, extensive and intensive mix of public awareness building and consultation processes, involving all the stakeholders, in a bid to seek solutions to the problem. This was carried out over an 18-month period and culminated in the drafting of a document entitled 'Agreement on the use and management of coastal resources in Soufriere'. The agreement included redefined fishing priority areas, marine reserve areas, multiple use areas, recreational areas, and areas for specific tourism-related activities.

The final agreement was reached in 1995, with the establishment of a general management body, the Soufriere Development Foundation, with a Technical Advisory Committee including representatives of all key resource user groups and relevant management agencies. Multi-interest groups are put together to review particular situations as they arise, maintaining the spirit of compromise and negotiation that has characterised the whole process.

SMMA has not solved all its problems but the high levels of conflict that used to characterise the area have reduced and scientific research shows some ecological improvement.

Information from case study material presented in various sources including Brown (1997), Brown and Pomeroy (1999) Brown et al. (2002).

For recent scientific results see Roberts et al. (2001).

Results continued...

The following factors (or the lack of them, constraints) are thought to have facilitated success in our case study research.

Factor (& activities see p.26 it was important for) [a, b, c or d]	Effect
Access to local groups through community networks [a, b, c, d]	Significant opportunity in NMP and constraint in PALSNP where staff were non local.
Strong and recognised local community-based organisations (CBOs) to work with – also good links to 'members' [b, c, d]	In HCMR, strong fishers' co-operative crucial in protecting fisher interests in decision-making. A constraining factor for fisher involvement in NMP.
Prolonged and intense discussion in appropriate fora [c, d]	Facilitating factors in both NMP and HCMR.
Strong outreach skills of MPA staff [a, b, c, d]	Particularly obvious in NMP where much effort was being put into community outreach.
Motivation/Commitment of MPA manager [b]	Mechanisms for participation in decision-making existed in all cases, but extent to which they were acted on very dependent on this (especially in start up phase).
Trust, mutual respect established (past performance/community ties/prolonged relationship) [b, c, d]	Lack of this a significant constraint at PALSNP, and, to a certain extent, Glover's Reef.
Inclusive schools' education programme [a]	Existed in Negril but in PALNSP education only at a few places and not at schools where many of local immigrant communities attended.

For full details including the specific activities and outcomes at each site see Garaway and Esteban (2003). Key to MPA acronyms shown on p.19.

ADDITIONAL 'ON THE JOB' SERVICES

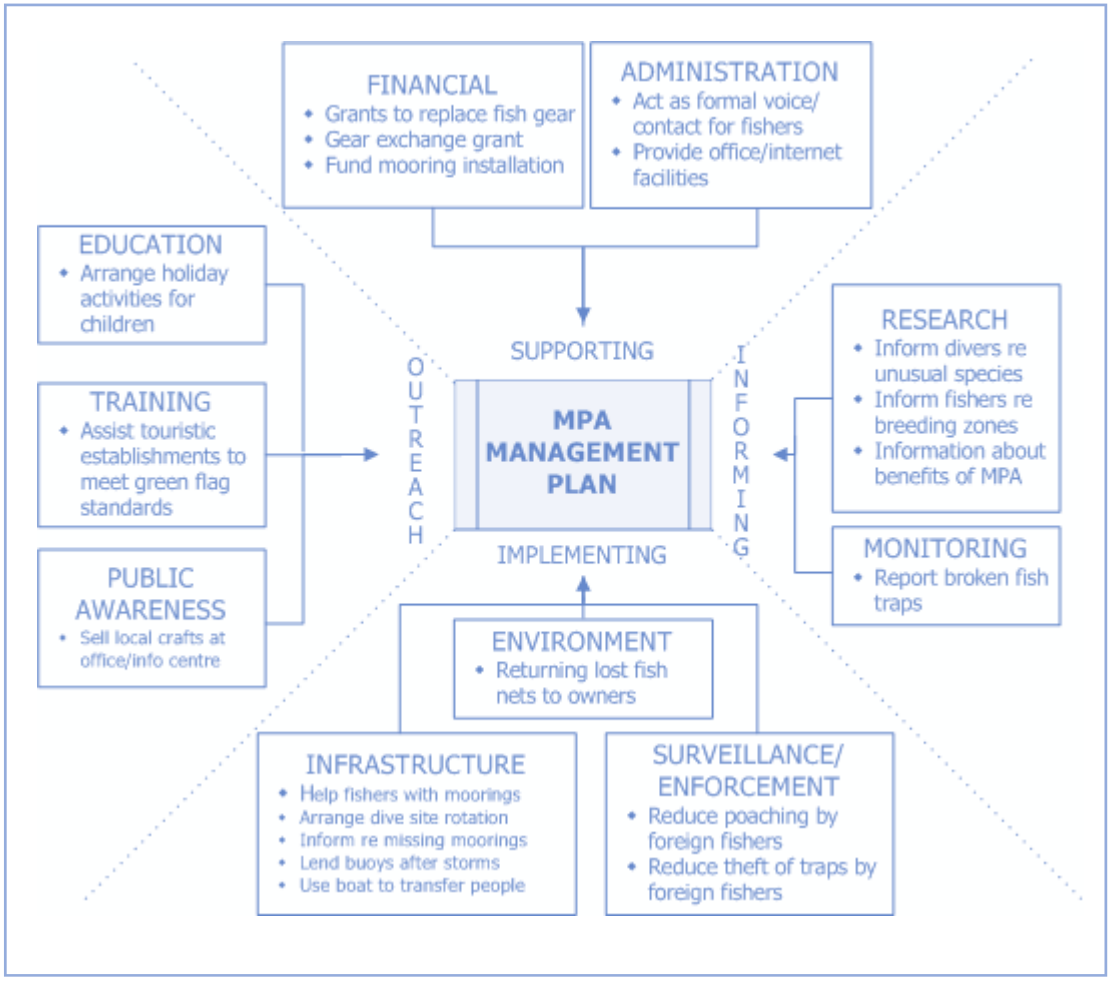
MPAs can provide assistance

Whilst carrying out their own duties, there are many small ways that an MPA can stimulate co-operation with (and between) different stakeholder groups at no substantial costs to themselves.

For example, MPAs may possess specialised equipment or manpower that is needed by someone, such as mooring installation equipment or a 4WD truck to tow boats out before a storm. Or an MPA might provide a neutral forum for user groups to report issues of conflict or helping to find solutions and take action before it is necessary for individual cases to be brought to more official agencies, such as the police or a court of appeal.

Assistance from an MPA improves morale and develops a sense of community spirit. 'On the job' services will vary from something small (e.g. collecting goods or transferring passengers from an offshore vessel) to larger requests, including transporting a sick relative to a nearby island or helping a local business with meeting environmental standards.

The following diagram is based on the MPA management plan presented on p.12-13 in which the same themes of supporting, informing, implementing and outreach appear. These themes are subdivided into the same management objectives. However, instead of focusing on ways that locals can help the MPA in achieving each objective, this diagram presents the opposite angle and suggests ways that the MPA can provide benefits or services to the community.



Typical MPA plan and types of services that could be provided to locals. Based on personal experience and research results presented in Garaway and Esteban (2003).

Which services can MPAs provide?

Gear exchange programme, Negril Marine Park, Jamaica

Funds for a gear exchange programme in the marine park were obtained by the Negril Coral Reef Preservation Society (NCRPS). The principle behind this programme was that NCRPS purchased material for fish traps that met minimum legal mesh sizes, and exchanged this material with fishermen. NCRPS generally gave as much as double the amount of material (which often replaced chicken wire that was under the legal minimum mesh size) than they received.

This programme commenced in 2001 in fishing villages within the Marine Park and was well received. The photo below shows the landing beach in Little Bay. Most fishermen in this village had voluntarily exchanged their original fish trap mesh for the replacement material within six months of commencement of the programme. Fishermen in Little Bay have reported that they have started seeing a difference resulting from establishment of a nursery in Little Bay and the use of larger mesh size. During interviews in March 2002, fishers reported that there were larger fish within the bay.

MPA patrol boat rescue fishers after engine break down, St Eustatius Marine Park, N.A. (Source: Kay Lynn Plummer.)

Fishers' rest stops, Portland Bight PA, Jamaica

Prior to establishment of the protected area, fishers were alighting on most of the cays to refresh themselves and rest on the way to deep waters. This was not considered conducive to environmental health of the cays and fishers have agreed to use only two principal cays as rest stops.

The Portland Bight PA is providing sanitary and other facilities for fishers. Additionally, the Marine Ranger Corps regularly collect rubbish from allocated sites on the cays.

Source: Portland Bight Protected Area Management Plan, 1999 (Peter Espeut, Editor).

Scholarships at Laughing Bird Caye, Belize

Gladden Spit/Laughing Bird Caye Marine Reserve is managed by the NGO, Friends of Nature Belize. The NGO has arranged for a proportion of user fees (received from tourists) to be paid directly into scholarship funds for children. These funds provide educational scholarships for talented children from poorer communities around Placencia in Southern Belize. Without these scholarships, these children would otherwise be unable to attend high school.

Source: Esteban and Garaway (2002).

Left hand column: gear exchange programme in Negril. Source: Garaway and Esteban (2003).

Photo: fish traps at Little Bay, Negril (Source: C. Garaway and N. Esteban).

KEY LEARNING POINTS (Part 2)

- It has been reported that the most successful MPAs are those where benefits of MPA establishment are fed directly back to local communities and help compensate those whose livelihoods have been adversely affected. **They will help you if you help them.**
- By protecting the marine environment, it may seem obvious that an MPA will benefit local people. However, since MPAs often take some time to show impacts, and there are frequently shorter-term costs, it may be necessary to have associated projects such as alternative livelihoods, community infrastructure and services.
- Five types of livelihood assets have been recognised in the literature, and an MPA can contribute to improving them all, for example physical capital (infrastructure), natural capital (a healthy environment), human capital (skills and knowledge), financial capital (income-generating activities) and social capital (new social networks and fora for communication).
- There are five particular areas where we feel MPAs can make a significant positive (or negative) impact:
  - Improving benefits from fisher-related livelihoods.
  - Improving benefits, or access to benefits, from tourism.
  - Improving human welfare.
  - Providing alternative or additional livelihood options.
  - Empowering communities.

  Key points in all five areas are presented on p.31.
- The last benefit mentioned, the empowering of communities, is central. Not only can it improve livelihoods, it can provide a foundation on which co-management can sit, which itself can lead to further possibilities of increased MPA effectiveness.
- As well as specific focused activities, there are many things that an MPA agency can do for local communities whilst 'on the job'. Such things may be small, but they can help increase the trust and sense of goodwill that are essential to developing more effective partnerships.

Improving fisher-related livelihoods

- Whilst benefits of an MPA for a fishery are well documented, these benefits don't automatically feed down to fishers, who are often from the poorest sectors of the community.
- More than any other stakeholder group, fishers frequently feel that the others are benefiting (particularly the tourism industry) at their expense. A situation that causes resentment and distrust.
- There are a number of management measures that can be taken to address fishers needs.
- The most common, zonation and ensuring compliance are not necessarily sufficient whilst fisher involvement in rule design and/or strong organisations representing fishers' interests appeared to have a significant positive effect.

Improving human welfare

- MPAs can improve the natural environment, and in turn positively impact on human health, safety and well-being.
- This is also achieved by being involved (often with others) in improving infrastructure and delivery of environmentally sensitive public services.
- When being part of larger initiatives, local people may not be aware of the role the MPA agency is playing and communication of this role is therefore critical.

Increasing access to tourism

- Tourism is frequently proposed as an industry that will offset negative impacts f restricting traditional use. However, local people, and particularly the poorer groups, can often suffer from the adverse effects of tourism whilst at the same time be unable to gain access to the industry or its benefits.
- Factors constraining access are diverse but exist whether local people wish to be employed or self employed within the sector or find a market for their goods.

Providing alternatives

- Developing alternative or additional livelihood options for those displaced requires time, financial resources and new skills.
- Despite this, there are positive experiences within the region that suggest ways forward.
- Given the complexities of providing alternatives, these users must be given more consideration at the MPA planning phase, as this could lead to a more realistic assessment of what measures are/are not possible.

Empowering communities

- Empowerment can involve increasing access to information, services, local organisational strengthening, increasing community participation in decision-making and reducing conflict.
- Community empowerment can bring benefits to local communities that can then in turn increase the effectiveness of MPA operations. As such, community empowerment may hold the key to improved MPA management effectiveness.
- Evidence shows that MPAs can have a significant positive influence by promoting awareness of the problems, lobbying for improvements, developing and becoming involved in local initiatives, or helping local people to self-organise.

Boats at Little Bay, Negril, Jamaica. (Source: N. Esteban and C. Garaway).

ENCOURAGING LOCAL INVOLVEMENT

What motivates local involvement?

Self–interest, coercion and legitimacy are the mechanisms frequently discussed when considering why certain types of behaviour get institutionalised (Hurd, 1999), and the case here is no exception.

Ostrom (1990, see below), discussing when local people would self-organise and forgo short-term benefits to collectively protect their natural resources, believed that they would do so when benefits were real (self-interest) and when they accrued to those who paid the costs (considered legitimate in most societies). Since MPAs often take some time to show impacts, providing associated projects such as alternative livelihoods, community infrastructure and services can enhance perceptions of benefits (examples were discussed on p.16-29.

Another of Ostrom's underlying criteria was a necessity for people to see that others involved were complying with regulations. This would require monitoring and enforcement (a form of coercion).

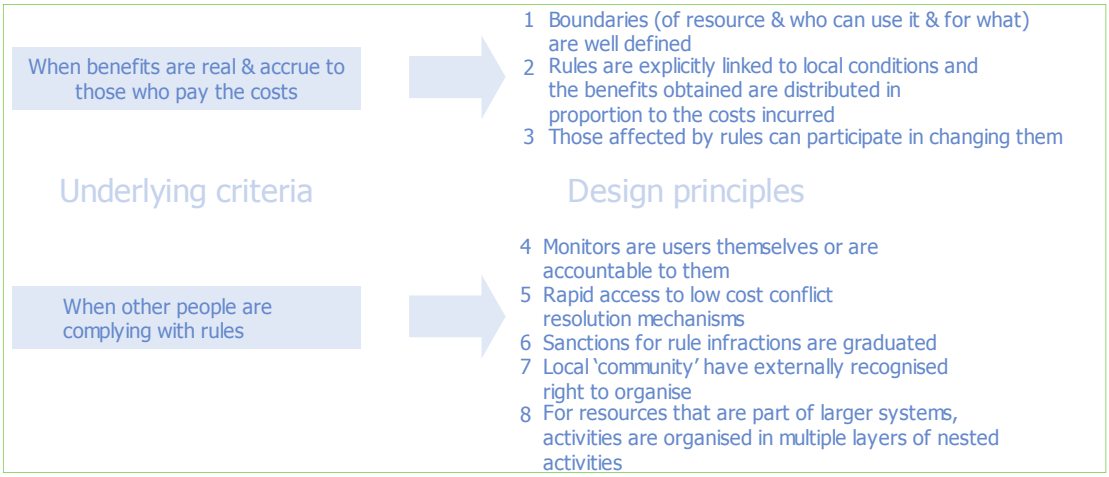
Speaking specifically with regards to co-management, as opposed to self-organisation, Rowe and Frewer (2000) suggest that effective participation is reinforced if the outcomes of participation have a perceptible and positive impact on the resources themselves (again notions of self-interest), whilst Rőling (1994) suggests that collective action is achievable when multiple stakeholders realise that they have the same resource management interests (collective self-interest), that they have the influence to change one or more parts of the problem, and that they are willing to work together to solve it.

All of these ideas are relevant in the case of MPA management and the following pages show examples where the presence (or absence) of these incentives has led to successful (or less successful) outcomes.

1. Institutional design principles

Ostrom's comparative analysis of a large numbers of case studies, led to the development of a set of, now well-known, institutional design principles that are described below.

For more information on these principles see Ostrom, 1990. For a study of them being scrutinised with respect to management performance of MPAs at selected sites in the Caribbean see Mascia (2000).



The importance of these principles has since been investigated in a variety of different resource systems throughout the world and found to be relevant in many cases, including Caribbean MPAs, (though not necessarily sufficient). For a recent review of the range of conditions brought up by other researchers, see Agrawal, 2001. Ostrom's principles have implications for MPA design at three levels, which are discussed in turn on the following pages.

- External legal and policy level. (Principles 7 & 8 - p.34-35).
- MPA decision-making level - who decides the operational rules and how, and who enforces and sanctions non-compliance. (Principles 3,4 & 5 - p.36-39).
- MPA operational level - which rules are put into operation. (Principles 1,2 & 6 - p.40).

THEORY & IMPLICATIONS

Institutional design is crucial and to a certain extent reflects the priorities of the designers. However, institutional design is not sufficient in and of itself, and without a corresponding shift in attitudes and behaviour, such principles are in danger of being 'paper principles' serving perhaps political as opposed to any real operational ends. The importance of this was illustrated in our own case study research (see Table on p.27). All MPAs had mechanisms for local participation in decision-making but the extent to which it occurred and led to real involvement was as much, if not more, to do with the individual motivations of managers, and the resources they were willing/able to put into the activities, as it was the mechanisms for participatory decision-making themselves (though obviously without the latter, the former would have been redundant). For the institutional design principles on the page opposite to be effectively operationalised, a shift in attitudes along with a complementary shift in prioritising activities and developing skills, and allocating human and financial resources is required. Given that, for MPAs, financial resources and decisions on how they can be spent regularly come from outside, such shifts will also need to be considered by MPA funders and donors.

Below are some of the shifts required and additional resources that have been recognised as important by those active in co-management research and practice in the Caribbean and beyond. The information below comes from various sources as indicated in the right hand column.

2. Other requirements: behavioural and attitudinal shifts

The information in the diagram below has been split into changes required at three levels: 1. The legal, policy and funding framework under which an MPA operates; 2. The level at which decisions about MPA operations are made; 3. The operational level.

	Additional Resources / Attributes	Behavioral / Attitudinal Shifts
External level legal/policy/ funding environment	• Legal recognition of local institutions/organisations • Funds allocated for activities to increase local capacity for, (and interest in), 'co-management'	• Political will to enact existing 'co-management' legislation and create new legislation • Recognition of local organisations • Positive attitude towards devolution
MPA Decision-making level	• Effective leaders • Recognised community organisations (recognised from above and below) • Appropriate fora/mechanisms for meaningful exchange • Time/financial resources for participatory decision-making	• Commitment to capacity building • Commitment to participatory decision making • Commitment to developing trust and mutual respect • Commitment to trying to understanding & reduce conflict
Operational level	• Financial, time & human resources to allow development and strengthening of local partners for collective action • Skilled outreach staff • Access to community networks • Transparency • Accountability • Openness • Time for social preparation and rapport building	As for level above + • Talking 'with' local people as opposed to 'at' local people • Learning by doing • A 'people' as well as a 'conservation' perspective

enabling (between External level and MPA Decision-making level)

enabling (between MPA Decision-making level and Operational level)

Information in the table has come from various sources including Pomeroy et al (2001); Agrawal (2001); Working group at special concurrent session on MPAs at 55th GCFI, Mexico, reported in Esteban and Garaway (2002); Brown et al. (2002); Garaway and Esteban (2003).

EXTERNAL LEGAL, POLICY & FUNDING ENVIRONMENT

Current opportunities and constraints in the Caribbean region

Brown and Pomeroy (1999) examined the potential of co-management in the countries of the Caribbean Community (CARICOM) in relation to its potential in fisheries management. Despite the fisheries focus, much of what they described is also relevant in the case of MPA management, not least because MPA management will frequently require fisher involvement. Whilst there were examples of successful co-management in the region, the authors identified several constraints to successful implementation including the following:

- Few formal traditions of co-management to draw experience from.
- Lack of political support for decentralising authority and responsibility even when legal structure and authority exists.
- Limited number and weakness of fisher organisations.
- Limited financial and technical resources and skilled staff to facilitate co-management.
- Limited laws and policies in support of decentralisation, empowerment, organising and use-rights.
- Limited government-fisher co-operation.
- Lack of partnerships between government departments.

With regard to the requirements presented on pages 32-33 for successful local involvement and/or self-organised collective action, it can therefore be seen that many are currently lacking, including some relating to the wider external legal, policy and funding environment. Some of these concern lack of resources and/or appropriate attitudes. Others concern institutional design (e.g. limited laws/policies; limited integration between departments).

Despite these constraints there are some positive examples of an enabling external environment in the region. The table below shows current supra-national legislation that could be used to enable increased user involvement in MPA management. The example of SMMA opposite is a good case of an MPA that has used existing legislation to good effect.

Unless stated otherwise, information in this table comes from research conducted during this project reported in Anderson et al. (2003).

OECS countries include Antigua and Barbuda, Dominica, Grenada, Montserrat, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines.

Legislation	Range	Opportunity
Heritage Convention (1972) concerning the protection of the World Cultural and Natural heritage	Global Convention. Accepted by several Caribbean countries (see Anderson et al. 2003)	Provision for the consideration of livelihoods and the economic contributions of MPAs as legitimate objectives.
SPAW (1990) Protocol concerning specially protected areas and wildlife of the marine environment of the Wider Caribbean Region	Regional agreement adopted under the Caribbean Environmental Programme of UNEP (CEP/UNEP)	Measures adopted include: ♦ Active involvement of local communities, as appropriate, in the planning and management of protected areas, including assistance to, and training of, local inhabitants who may be affected by the establishment of protected areas. ♦ Development of qualified managers, and technical personnel as well as appropriate infrastructure.
Harmonized Fisheries Legislation (1984, revised 1993)	OECS countries	Gives Ministers responsible for fisheries the power to 'designate an area as a local fisheries management area' and to designate any local authority, fisher's organisation, fisher co-operative, or other appropriate body representing fishers in the area as the Local Fisheries Management Authority (LFMA) for that area (Brown & Pomeroy 1999).
Participation in multi-lateral environmental agreements generally	N/A	Well documented advantages including gaining access to international funding agencies such as the Global Environmental Facility (see p.35) or World Bank.

Using legislation

1. SMMA

(Soufriere Marine Management Area)

The case of co-management at SMMA has already been described on p.27 and is not described again. However, it is worth pointing out here that the legal backing for this co-management arrangement came from the use of the Harmonized Fisheries Legislation, specifically the St Lucia Fisheries Act No. 10 (1984). In addition, the Soufriere Marine Management Authority was put on a more formal footing by a 2001 agreement between the Cabinet and the Soufriere Marine Management Inc. (SMMI), a not for profit company formed for the purpose of management of the SMMA. Anderson *et al.* classify management at SMMA as 'high'. They state that this is "a function of the clarity of the legislative and policy framework as outlined in the Fisheries Act and the 2001 Agreement" and that "Sensitivity to the fulfilment of international obligations is definitely an important aspect of the objective and management of the area and there is some indication that these features have helped the SMMA to realise many of its objectives", Anderson et al. (2003), p.24.

2. HCMR

(Hol Chan Marine Reserve)

The HCMR in Belize is managed by the HCMR Board of Trustees which is recognised in legislation. This MPA was also classified with high management by Anderson et al. (2003) and one of the reasons put forward for this was "the institutionalisation of community participation in the HCMR Board", p.26. Despite this, more recently there had been problems with the make up of the Board, which was no longer perceived to be fully representative of all stakeholders. Not all responsibilities had been devolved to the Board and changes to membership had to be agreed by the Minister. This took time, and the inability to make timely responses to changing circumstances was seen as a constraint.

Funding for community involvement

Obtaining funding for MPAs in general is obviously an ongoing concern, but obtaining donor funds for developing community involvement in management is becoming easier. This was recognised as a significant new opportunity for MPA co-management by working groups at the 55th GCFI (Esteban and Garaway, 2002).

Of particular relevance at the current time is the Global Environmental Facility's (GEF/ UNDP) Small Grants Programme, which funds community groups to develop sustainable use and alternative livelihood activities in buffer zones and surrounding areas, or community mobilisation for conservation. With an MPA agency's assistance, community groups can therefore be empowered to help themselves. This fund is already being used for community benefit in Belize - see p.25).

For details of the small grants programme and qualifying attributes, visit the GEF website at http://www.gefweb.org/sgp For other funding sources see references in Part 4 of these guidelines.

Integrated management

One of Ostrom's principles (p.33) required that for resources that are part of larger systems (as most MPAs are), activities should be organised in multiple layers of nested activities. Translated in this case, this suggests the need for MPAs to be nested within a framework of integrated ecosystem or coastal area management. The lack of widespread integration in the Caribbean region has been recognised as a constraint by several authors and there are many calls for policy and legislative changes. Publications that address these issues include CEP (1996) and Brown et al. (2002).

In our research, lack of integration was a significant constraint in PALSNP, Turks and Caicos. Park management had no input into the decision-making concerning development on the fringes of the Park and were therefore unprotected from outside influence. This, along with a lack of recognition of local people's rights to participate by government , were significant **external** constraints to local involvement.

Examples of authors suggesting the need for integrated management include; Brown and Pomeroy (1999); Brown et al. (2002).

Information about HCMR from Anderson et al. (2003) and Garaway and Esteban (2003).

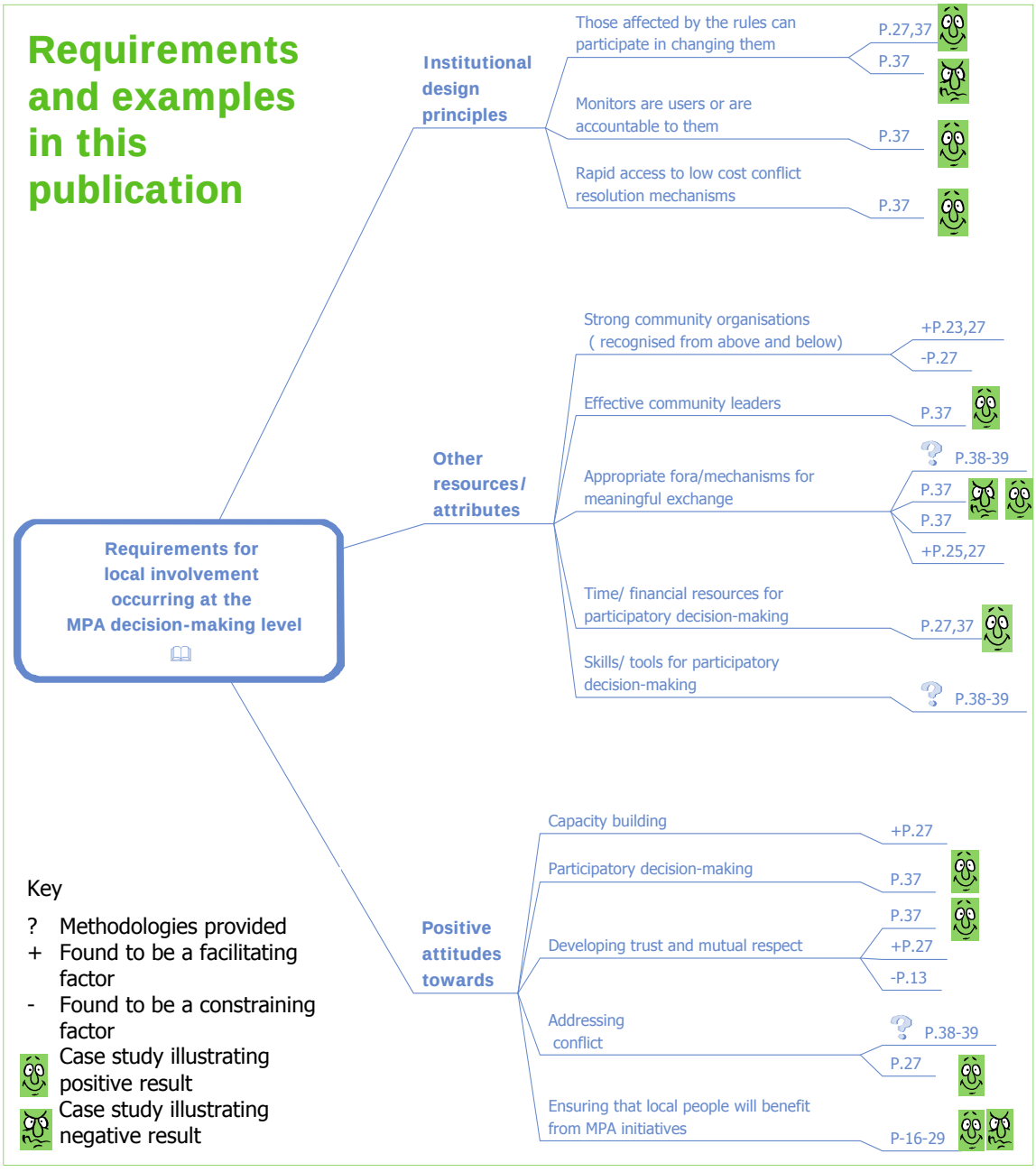
PALSNP is Princess Alexandra Land and Sea National Park.

LOCAL INVOLVEMENT IN DECISION-MAKING

We have already discussed characteristics external to the MPA setting that are crucial to encouraging local involvement in MPA management. Here we look at the factors crucial in the MPA decision-making environment itself. The table below synthesises the requirements at this level from p.32-33, giving additional information where examples of their importance can be found in this publication.

Local involvement in decision-making is key, and many (but not all) of the other requirements listed below are to facilitate this activity. The importance of allowing those who are affected by the rules to participate in designing/changing them has been demonstrated by many authors and was illustrated continuously in our own research. Some examples are provided opposite.

In the legal review, in all those MPAs where the management level was higher than the legislative type would have, *a priori* , suggested, community participation was cited as one of the key contributing factors (Anderson et al., 2003).



Community participation in the creation of Negril Marine Park, Jamaica

Information for this case study comes from Thacker, K (2002), and our own research, Garaway and Esteban (2003).

As mentioned on p.33, a positive attitude towards participatory decision-making is fundamental to its success and nowhere is this commitment more evident than in the creation of the Negril Marine Park, where the motivation of key individuals drove the process along.

In 1990, a small group of local citizens, fishermen and watersports operators joined together to form the Negril Coral Reef Preservation Society (NCRPS), to protect the marine environment and establish a marine park. In 1993, The Negril Area Environmental Protection Trust (NEPT) was formed to act as a co-ordinating agency and local environmental management council for a Marine Park and Environmental Protection Area. According to Thacker (2002, p.1), "The creation of NEPT involved an unprecedented involvement of members of the community. Over 100 meetings were held with grass roots representatives … this included community members, representatives from government and non-governmental organisations, farmers, and fishermen". The participation involved more than just meetings. It also included: participant-driven problem and threat identification and solution finding; consultations with fishers and farmers; field trips and scientific input (Thacker, 2002).

Coming up with a zoning plan for the MPA was part of the process, and between January 1996 and January 1997 community meetings and informal discussions were held with fishers and watersports operators in order to get their feedback on how the zoning should be designed (Thacker, 2002). Whilst there have been problems with the plan, one successful element of it has been the self-policing (by fishers) of two areas designated as fish sanctuaries, which have shown promising ecological results. One had been self-policed since 1995, but was helped by the NMP who officially designated it with buoys. The advantages of self–policing were obvious. The fishers were in prime position to monitor the respective bays (unlike NMP staff) and when fishers from outside did come in with nets, the fishers had their own informal methods of dealing with it, as they did with conflicts that arose within their own fishing community.

Here then, the values of users being monitors, and low-cost conflict-resolution arenas are apparent. The presence of a trusted and highly respected community leader to drive the process was also a facilitating factor in one of the bays (Garaway and Esteban, 2003).

The whole process was approached in a way that was sensitive to the needs of the community. Great care was chosen to find appropriate times and places to discuss with people and to go back time and time again. This prolonged dialogue built up a sense of trust and mutual respect, as did the fact that the NMP staff were also members of these communities, and showed commitment to, and belief in, the cause. NMP still has problems but the way in which the MPA emerged built significant social capital that may aid the solving of these problems in the future.

PALSNP - Constraints to community participation and ways forward

PALSNP - Princess Alexandra Land and Sea National Park, Providenciales Turks and Caicos.

At the time of our research, staff at PALNSP were wishing to increase community involvement in MPA management, but unlike the situation in Negril above, the MPA had been created with no community involvement of any kind, and therefore there were few established communication networks or mechanisms for exchange, little outreach experience or social capital to build upon. In the opinion of the staff, the previous lack of consultation had left the resident population feeling that the MPA was not for them (Garaway and Esteban, 2003). This made the job of the current PALNSP staff that much harder. However, there were also other serious problems. The wider social tensions on the island relating to immigration, *cont'd on p.38*;

TOOLS & FORA FOR EFFECTIVE LOCAL INVOLVEMENT

(Continued from page 37)
split the current residents (into 'belongers' and 'non-belongers') and building trust and co-operation in a climate of such distrust and animosity was a huge battle.

Regarding outreach skills, they also had problems. Firstly there were difficulties in communicating with the largely Creole speaking immigrant population with no staff speaking the language. Secondly, much of this population were heavily suspicious of authority and there was little incentive to communicate and few developed fora for exchange. The example of communication through the churches as described on p.10, is one route that is being examined for the future, (Garaway and Esteban, 2003).

Increased involvement of members of the local community (including the immigrant community) on the National Parks Environmental Advisory Committee (NPEAC), increasing their exposure to the micro-projects fund (see p.25) and translating existing education materials are all positive steps forward. However, with low levels of trust, few local community-based organisations (CBOs) to work with, and limited staff capacity, building relationships in this MPA will be a lengthy, difficult and costly process.

Approaches to community involvement

The table below, (taken from Wight, 2002), suggests what types of techniques are appropriate for what types of purpose, and what message they send to the local community. They are organised on an increasing scale of involvement and there are examples of their use throughout MPAs in the Caribbean region, some of which have already been presented in this publication.

Moving towards co-management and the principles that encourage local commitment to MPA management (p.32), requires moving up this scale towards a process of joint planning. Some decision-support tools and techniques that might facilitate this are briefly described on p.39. Eagles et al. (2002) point out that, as a general rule, the further up the scale one goes:

- The more staff time and energy (and skill) is required.
- The more money it costs to support the process.
- The more detailed and sophisticated resource information is requested by participants.
- The greater is the expectation of participants that their contributions will be valued and used.
- The greater the visible commitment that must be made to use the results, keep stakeholders informed, and explain any deviations from recommendations or decisions.

Table taken from Wight (2002).

Approach	Description	Selected techniques	Message to the public
Public information/ education	'Knowledge about a decision'	Advertising Newspaper inserts Posters/leaflets	You want them to know about it and understand it
Information feedback	'Being heard before the decision'	Briefs Focus groups	You want them to understand and support your programme
Consultation	'Being heard and involved in discussions'	Community meetings Informal discussions Conferences Workshops	You want to understand them and value their views and input
Extended involvement	'Having an influence on the decision'	Advisory groups Task forces	You seriously expect to implement most of their advice
Joint planning	'Agreeing to the decision'	Consultation Mediation Negotiation	You are fully committed to using the results in all but the most exceptional circumstances

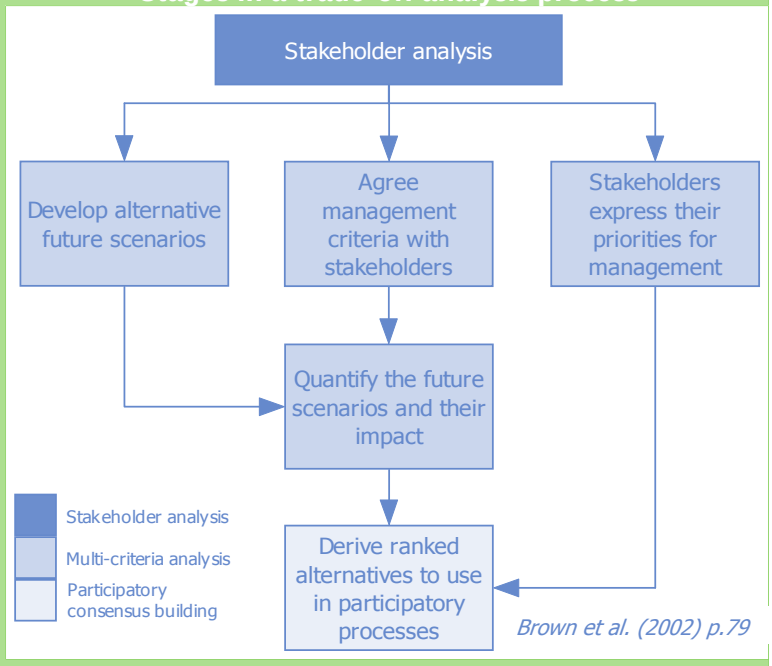
Focus groups - a small group of people (usually around 10) from the community are brought together and their views sought on a particular subject. The process usually takes only a couple of hours.

MANAGING CONFLICT & BUILDING CONSENSUS

Buccoo Reef Marine Park, Tobago

With competing interests and usage of MPA resources, conflict amongst stakeholders is almost inevitable in MPAs. In a process of participatory decision-making, a means of dealing with the conflict that will inevitably arise is therefore essential.

Stages in a trade-off analysis process



Brown et al. (2002) p.79

At Buccoo Reef a participatory methodology for analysing the conflicts and trade-offs between uses and users of the MPAs was developed to enable the local stakeholders to arrive at consensus concerning the future priorities of development in the area. The results were promising (an ongoing forum has been established to develop and sustain the strategy for the Marine Park) and the methodology is now being promoted throughout the Caribbean. An outline of the procedure is shown in the diagram above and described in brief below. Full details can be found in the references mentioned on the right hand side.

According to Brown et al. (2001), "Trade off analysis is a process whereby stakeholders are engaged to consider the merits of different management strategies, and explicitly determine management priorities. It requires information to be able to answer stakeholders' questions about impacts of different activities on the resource in question. Organising that information, so that it is understandable and useable is a central feature of trade-off analysis", p.8. Major steps include:

- Identification and classification of the stakeholders and their interests (through a stakeholder analysis see p.8-11).
- Identification of the alternative courses of action open to the decision-makers (future scenarios).
- Identification of the main issues and concerns of the stakeholders (management criteria).
- Estimation of the impact of the alternative courses of action on the management criteria.
- Engaging stakeholders to create management priority weights.
- Building consensus among the stakeholders using the information collated and weights elicited to find areas of common understanding.

The consensus building process in Buccoo Reef highlighted a number of important lessons:

- Strategies should build on already available resources (knowledge, experience, ideas) and there are almost invariably opportunities to develop partnerships.
- Concentrate on what is achievable. Considering unrealistic solutions is a waste of resources when stakeholders are working together.
- Focus on areas that have broad support. Taking action on areas of agreement can lead to increased co-operation among groups and can motivate the groups to reach further agreement.

The approach outlined here was the result of a project funded by the DFID Natural Resources Systems Programme. A manual for the approach explaining in detail how the approach was executed (Brown et al., 2001) is available online at http://www.uea.ac.uk/dev/publink/brown/analysis.pdf

There is also a book (Brown et al. 2002) looking more generally at integrating coastal conservation and development. It provides both a theoretical and practical perspective on the issues and uses the approach developed in Buccoo Reef as a key case study. Useful information on the nature of conflicts in the coastal zone and approaches to conflict resolution and consensus building is

OPERATIONAL RULE DESIGN

On p.32 we introduced the idea that locals were more likely to become more actively involved in management when benefits were real and accrued to those who paid the costs and when people could see that others were also complying with the rules.

Being responsive to the myriad ways that MPAs can benefit the local community (see p. 16-31) may help, particularly in the short-term, to increase perceived benefits amongst locals. This may be part of, or in addition to, following the design principles first mentioned on p.32.

- Boundaries of the resource and who can use it (and for what) are well defined.
- Rules are explicitly linked to local conditions.

The case below shows the impact of having these principles in place or not.

Glovers Reef Marine Reserve - unclear boundaries and adaptation to local circumstances

For details of our research at Glovers Reef see Garaway and Esteban (2002).

At the time of our research in early 2001, there were several problems in the Reserve which, though largely solved now, serve to illustrate the importance of the design principles mentioned above. The GRMR was split into four zones and conflict at the time was centred around two of them; the conservation zone and the seasonal closure zone.

The conservation zone

Commercial fishing was banned in the conservation zone but 'subsistence' fishing by residents of the atoll only was allowed. At the time of our research there was a lack of clarity over the actual physical boundary of the conservation zone and the definition of 'subsistence', both of which were causing problems.

Nassau Grouper. (Source: M.Lamboeuf, Fishbase, www.fishbase.org)

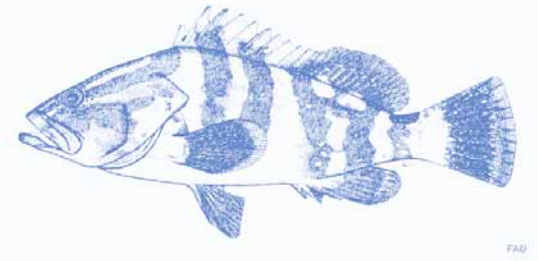
New boundaries for the conservation zone had been agreed (by an advisory committee including fisher representatives) in 2000, but these were only legislated for in September 2001. In the interim, with few buoys to demarcate the zone, and some fishers denying knowledge of the new boundary, many fished inside the zone, causing others who may not otherwise have done so to do so too. Such activities were also fuelled by resentment of the atoll residents' use of the zone. Given that some had commercial ventures on the atoll, it was argued by some that they were not using the Reserve for 'subsistence' use only. Here then is an example of fishers feeling that they were paying the costs to someone else's advantage and hence co-operation broke down. The lack of clear zone delineation and 'entry' rules exacerbated the problem.

Seasonal closure zone

The seasonal closure zone, a Nassau grouper spawning bank, was closed to fishers between December 1st and March 1st. However 2000/2001 was the first year it had been seriously enforced.

The previous year, the Reserve had tried to impose the ban but under pressure from the co-operatives the government had given in and allowed hand line fishers from Hopkins village to fish there. Pressure was so great because for some, it was the only two months of the year that they fished and so the ban had stopped them fishing entirely. Here then local rules were not, at least in the perceptions of Hopkins fishers, adapted to local circumstances. Further resentment and distrust came from the fact that fishers felt they had neither been consulted nor provided with alternatives, and that scientists had been seen fishing in the zone in the closed period.

Since this time staff have got fishers involved in the grouper tagging experiment. (see p.13). This has had the dual benefit of providing alternative employment for some fishers and also increasing the fishers' understanding of the scientists' work - thereby increasing transparency and trust.



KEY LEARNING POINTS (Part 3)

- Benefits of (and the requirement for) local involvement in management are now well recognised within the region and were evident from case studies in our own research.
- Co-management, where local communities and resource users are actively involved in natural resource management decision-making is also increasingly being advocated.
- There has been a substantial amount of research into, and experience of, the factors that constrain or facilitate local involvement in natural resource management. This growing literature is of relevance to those involved in MPA management.
- Factors relate to institutional design, necessary resources or attributes, and the requirement for behavioural and/or attitudinal shifts.
- Facilitating institutional design principles have implications at three levels: the external legal, policy and funding environment in which an MPA is situated; the level at which decisions about specific MPA rules are made; and the level at which they are put in place.
- Crucial at all levels is a commitment and positive attitude towards a participatory and inclusive process from stakeholders on all sides. This includes a commitment to capacity-building, developing trust and mutual respect and trying to understand and manage conflict. Without such commitment, real and meaningful involvement will not develop.
- Recent studies in the Caribbean have shown that there are currently some constraints to co-management in this region. These include: few formal traditions of co-management to draw experience from; lack of political support for decentralising authority and responsibility even when legal structure and authority exists; limited number and weakness of local organisations; limited financial and technical resources and skilled staff to facilitate co-management; limited laws and policies in support of decentralisation, empowerment, organising and use-rights; lack of partnerships between government departments.
- Despite this, there are good examples of co-management in the region from which lessons can be learned, and some enabling factors that present new opportunities.
- At an external level, there is some supra-national legislation that could be used to formalise co-management approaches. Some MPAs have already used this to their advantage.
- Another new opportunity is the increased availability of international funding for co-management initiatives.
- Involvement of local communities can take many forms but participatory decision-making is at the centre of co-management. To achieve this, case studies show the importance of constant and prolonged dialogue with stakeholders, motivation and commitment on the part of the MPA agency and strong outreach skills. They also show that the process is a time-consuming and challenging one. In contrast, lack of communications networks, outreach experience or social capital are severe constraints to building local partnerships and the presence of distrust, tension or conflict between stakeholders, a significant obstacle.
- Even without wider societal tensions, with competing interests in, and usage of, MPA resources, conflict amongst stakeholders is almost inevitable. In a process of participatory decision-making, a means of dealing with this is essential.
- Tools for conflict resolution and consensus building are now widely available and some have been tested specifically with regard to MPA management in the Caribbean. Trade-off analysis specific to coastal resource management is a new and promising approach.
- Finally, allowing locals to be involved in designing MPA operational rules, through a process of participatory decision-making, is one of the most effective means of ensuring that rules are adapted to local people's situations, are therefore agreed to and complied with, and therefore strengthen rather than undermine MPA effectiveness.

RESOURCE & REFERENCE GUIDE

For ease of reference, this list is grouped into sections of interest and does not include the project research associated publications listed on p.44. Online publications and their web sites are indicated wherever possible.

References cited throughout this guide

Institutional and policy arrangements

Agrawal, A. (2001) 'Common property institutions and sustainable governance of resources', World Development 29: 1649-1672.

Brown, D.N. and Pomeroy, R.S. (1999) Co-management of Caribbean Community (CARICOM) fisheries. Marine Policy 23(6): 549-570.

Brown, N.A. (1997) Devolution of authority over the management of natural resources: the Soufriere Marine Management Area, St Lucia. CANARI, Trinidad.

Horril, J.C., Darwall, W.R.T. and Ngoile, M. (1996) Development of a MPA: Mafia Island, Tanzania. Ambio 25: 50-57.

Hurd, I. (1999) Legitimacy and authority in international politics. International Organization 53(2): 379-408

Mascia, M. (2000) *Institutional emergence, evolution and performance in complex common pool resource systems: MPAs in the wider Caribbean*. PhD Thesis, Duke University.

Ostrom, E. (1990) *Governing the commons; the evolution of institutions for collective action*. Cambridge University Press, Cambridge.

Röling, N.G. (1994) Communication support for sustainable natural resource management. IDS Bulletin 25 (2): 125-133.

Rowe, G. and Frewer, L.J. (2000) Public participation methods: a framework for evaluation. Science, Technology and Human Values 25: 3-29.

Pomeroy, R.S, Katon, B.M., and Hartes, I. (2001) Conditions affecting the success of fisheries co-management: Lessons from Asia. Marine Policy 25: 197-208.

Sustainable livelihoods and poverty

Carney, D. (1998) Sustainable rural livelihoods. Department for International Development, London, UK.

Chambers, R. (1983) *Rural development; Putting the Last First*. Longman Scientific and Technical, Harlow, UK.

Stakeholder analysis and methodologies for enhancing participation

http:/www.iied.org.

Renard, Y., Brown, N., Geoghegan, T. (2001) Stakeholder approaches to natural resource management in the Caribbean. CANARI Communication No 286. Available online at http://www.canari.org/286renard.pdf

Tools and guidelines for MPA and protected area management

Brown, K.,Tompkins, E.L. and Adger, W.N. (2001) Trade-off Analysis for Participatory Coastal Zone Decision-making. ODG, University of East Anglia, UK.

Brown, K., Tompkins, E.L. and Adger, W.N. (2002) Making waves: integrating coastal conservation and development. Earthscan Publications Ltd, London, UK.

Eagles, P.F.J., McCool, S.F. and Haynes, C.D. (2002) Sustainable tourism in protected areas. Guidelines for planning and management. IUCN Gland, Switzerland and Cambridge, UK. Available online at www.iucn.org.

Kelleher, G. (1999) Guidelines for MPAs. IUCN Gland Switzerland and Cambridge, UK. Available online at www.iucn.org

Roberts, C.M. and Hawkins, J.P. (2000) Fully-protected marine reserves: a guide. WWF Endangered Seas Campaign. Washington DC, USA. Available online from http://www.panda.org/resources/publications/water/mpreserves/mar_dwnld.htm

Wight, P. (2002) Practical Management tools for resource protection in tourism destinations. In Diamantis, D. and Geldenhuys, S. (Eds), Ecotourism: Management and Assessment Continuum, London, UK.

MPAs and marine ecology

Jameson, S.C., Tupper, M.H. and Ridley, J.M. (2002) The 3 screen doors: can marine "protected" areas be effective? Marine Pollution Bulletin 44: 1177-1183.

Roberts, C.M. and Polunin, N.V.C. (1993) Marine reserves: simple solutions to managing complex fisheries. *Ambio* 22: 363-368.

Roberts, C.M. and Polunin, N.V.C. (1994) Hol Chan: demonstrating that marine reserves can be remarkably

GUIDELINES AND METHODOLOGIES

effective. Coral Reefs 13: 90.

Nugues, M., Schelten, C. and Roberts, C. (2000) Don't bury our beloved coral reefs. Soufriere Marine Management Area, St Lucia. http://www.smma.org

Roberts, C.M., Bohnsack, J.A., Gell, F., Hawkins, J.P. and Goodridge, R. (2001) Effects of marine reserves on adjacent fisheries. Science 294: 1920-1923.

Stoner, A.W. and Ray, M. (1996) Queen conch, *Strombus gigas*, in fished and unfished locations of the Bahamas: effects of a marine fishery reserve on adults, juveniles and larval production. Fishery Bulletin 94: 551-565.

MPA case study reference material (not listed above)

CARECO (2001) *Socio-economic assessment of Negril Environmental Protected Area*. NEPT

Caribbean Coastal Area Management (CCAM) Foundation (1999) Portland Bight Protected Area, Jamaica. Management Plan 1999-2004. Edited by Peter Espeut. Kingston, Jamaica.

CRMP (1998) Coastal resources management programme - managing the national parks' system of the Turks and Caicos Islands. Department of Environment and Coastal Resources 4. Providenciales, Turks and Caicos.

Munnings, A. and Arana, R. (2001) Glover's Reef Marine Reserve: Annual Report, 2001. Department of Fisheries, Belize City, Belize.

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

Woodley, J., Sary, Z. and Gayle, P. (in press) Fishery management measures instituted at Discovery Bay, Jamaica, with special reference to establishment of the fisheries reserve. Gulf and Caribbean Research.

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

Guidelines on MPAs

MPAs and tourism

World Tourism Organisation (1992) Guidelines: development of national parks and protected areas for tourism. UNEP-IE/PAC Technical Report Series No. 13. Madrid, Spain.

MPAs and financial sustainability

Financing Protected Areas Task Force of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Unit of IUCN (2000) Financing protected areas. IUCN Gland, Switzerland and Cambridge, UK. Available online at www.iucn.org.

Task Force on Economic Benefits of Protected Areas of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Service Unit of IUCN (1998) Economic values of protected areas: guidelines for protected area managers. IUCN Gland, Switzerland and Cambridge, UK. Available online at www.iucn.org.

The Nature Conservancy and Caribbean Environment Programme (UNEP) (2001) Funding protected areas in the wider Caribbean: a guide for managers and conservation organisations. The Nature Conservancy, Virginia, USA. Available from publications@tnc.org.

Integrated planning

Caribbean Environment Programme (1996) Guidelines for integrated planning and management of coastal and marine areas in the wider Caribbean region. Caribbean Environment Programme, UNEP and Island Resources Foundation. Available online at www.cep.unep.org.

Useful methodologies

Useful websites for tools and methodologies for enhancing participation

http://www.iied.org
http://nrm.massey.ac.nz/changelinks/cmnr.html

Socio-economic monitoring

A generic manual has been published with methodology for socio-economic monitoring. A task force is currently finalising a Caribbean-specific manual.

Bunce, L., Townsley, P., Pomeroy, R. and Pollnac, R. (2000) Socio-economic manual for coral reef management. Australian Institute for Marine Science. Copies are available free from www.aims.gov.au

This table contains other useful guidelines that are not referred to in the text.

Most of these publications are available online and, wherever possible, web site addresses are provided.

These methodologies supplement those described in these guidelines.

LINKING RESEARCHERS WITH MPAs

Extending research links

The role of research is often underplayed within MPAs due to insufficient knowledge about research possibilities or lack of personal contacts with appropriate researchers. When sourcing research and funding possibilities, one of the key regional resource networks and initial points of contact is the Caribbean Marine Protected Area Management (CaMPAM) list serve (contact listmaster: Lloyd Gardner at lgardner@webmail.uvi.edu to join). Another useful list serve is the Caribbean Biodiversity Conservation group (to join send empty email to caribbean-biodiversity-subscribe@egroups.com) and a third is the list managed by the Gulf and Caribbean Fisheries Institute (GCFI) (to join send email to daveanderson@tamu.edu). These list serves are regulated.

It is important to recognise that research institutions can provide both human and financial resources to help achieve MPA management objectives (e.g. voluntary work placements by graduates, thesis/diploma research, annual field courses). Some of the key regional research institutions, and first points of contact, follow below. Most of these institutions have contributed to activities leading to these Guidelines, and are in a position to help develop many of the suggestions proposed in this publication.

UWI Jamaica—Centre for Marine Science	George Warner (gfwarner@uwimona.edu.jm)
UWI Barbados—Natural Resource Management	Hazel Oxenford (hoxenford@uwichill.edu.bb)
UWI Trinidad—Sustainable Economic Development Unit	Dennis Pantin (dpantin@fss.uwi.tt)
University of Guam—MPA Research Group	Mark Tupper (mtupper@guam.uog.edu)
University of Puerto Rico—CORALINA	Martha Prada (marthap@coralina.org)
University of Puerto Rico—Sea Grant Programme	Ruperto Chapparo (r_chaparro@rumac.upr.edu)
The Nature Conservancy—Caribbean/NE Division	Georgina Bustamante (gbustamante@tnc.org)
Caribbean Natural Resources Institute (CANARI)	Vijay Krishnarayan (vijay@trinidad.net)
Caribbean Conservation Association (CCA)	Patrick McConney (patrickm@caribsurf.com)

Other publications arising from this research

Characterisation of 80 Caribbean MPAs:

Geoghegan, T., Smith, A.H. and Thacker, K. (2001) Characterisation of Caribbean Marine Protected Areas: an analysis of ecological, organisational and socio-economic factors. CANARI Technical Report No. 287. Trinidad.

Institutional, ecological, socio-economic and legal research at case study MPAs:

Anderson, W., Best, M.N. and Richards, R. (2003) Marine Protected Areas: legal and policy framework. Faculty of Law, UWI, Barbados. February 2003.

Best, M.N. (2002) A review of legislation, policy and institutional arrangements, assisting or constraining, the implementation of MPAs in Dominica and the Turks and Caicos Islands. MSc Thesis, CERMES, UWI, Barbados.

Cummings, A.R. (2002) An assessment of the ecological impacts of two successfully implemented MPAs in Belize. MSc Thesis, CERMES, UWI, Barbados.

Francis, S.K.Y., O'Sullivan, C.H., Best, M.N., Richards, R.A., Oxenford H.A. and Anderson, W. (in press) A preliminary investigation of the impacts of legislative status, management and ecological condition of MPAs on the socio-economic status of stakeholders in Jamaica and the Turks and Caicos Islands. Proc. 55th GCFI. November 2002.

Francis, S.K.Y. (2002) An assessment of the impacts of two successfully implemented MPAs on the livelihoods of stakeholders in Jamaica and the Turks and Caicos Islands. MSc Thesis, CERMES, UWI, Barbados.

O'Sullivan, C.H. (2002) A preliminary assessment of the ecological impacts of two MPAs in the wider Caribbean. MSc Thesis, CERMES, UWI, Barbados.

Richards, R. (2002) A Review of national policy and legislation contributing to or constraining successful Marine Protected Areas implementation in Belize and Jamaica. MSc Thesis, CERMES, UWI, Barbados.

Concluding reports

Esteban, N. and Garaway, C. (in press) Institutional arrangements for Caribbean MPAs and opportunities for pro-poor management. Summary workshop report of a special concurrent session. Proc. 55th GCFI. November 2002.

Esteban, N. and Garaway, C. (2002) Institutional arrangements for Caribbean MPAs and opportunities for pro-poor management. Final project workshop report, 55th GCFI, Mexico. November 2002. MRAG Ltd, UK.

Garaway, C. and Esteban, N. (2003) Report on the impact of MPAs on poorer communities living in and around MPAs: institutional opportunities and constraints. MRAG Ltd, UK.

Publications cited in this list are either available through the project website (address on p.2) or via UWI Barbados (see above table for contact details).

ABOUT THE ORGANISATIONS

Natural Resources Systems Programme (NRSP), Department for International Development (DFID), UK

The goal of the NRSP is to generate benefits for poor people by the application of new knowledge to natural resource (NR) systems. This will be achieved through delivering new knowledge that can enable poor people who are largely dependent on the NR base to improve their livelihoods. The central focus of knowledge generation is on changes in the management of the NR base that can enhance the livelihood assets of the poor over a relatively long timeframe, thus providing greater livelihood security and opportunities for advancement of poor individuals, households or communities.

Integrated management of natural resources is central to the research. The term integrated management defines not only the adoption of a holistic view of the NR base (landforms, soil, water, vegetation and organic residues) but also appreciates the integrated and dynamic nature of peoples livelihood strategies and how these affect their decision-making and capacity to use and manage the NR base. Studies of the livelihoods of the poor and their interaction with other (less poor) sections of society are an important part of NRSPs research. They are a means of understanding what changes in the management of natural resources are feasible and how poor peoples adoption of, or response to, these changes could assist them to secure and build their livelihoods.

Contact Details
NRSP, HTSPE Ltd
Thamesfield House, Boundary Way
Hemel Hempstead
HP2 7SR. UK

Tel: +44 1442 202 400, Fax: +44 1442 266 438
www.nrsp.org.uk

MRAG LTD

The Marine Resources Assessment Group (MRAG) Ltd is a UK-based consulting firm dedicated to promoting sustainable utilisation of natural resources through sound integrated management policies and practices. MRAG has a long and highly productive history of designing and implementing integrated resource management systems in marine, estuarine, riverine and floodplain environments. It has a core staff of more than 30 full-time specialists with a wide variety of expertise and practical and technical experience, providing a multidisciplinary approach to every project. For over a decade, MRAG has worked in more than 60 countries for government agencies, international agencies, non-governmental organisations and private sector companies. MRAG's capability to service an extensive array of resource management needs is further extended through a network of associations and collaborations with internationally acclaimed experts from academic institutions and other private organisations worldwide.

Contact Details
MRAG Ltd
18 Queen Street
London
W1J 5PN. UK

Tel: +44 20 7255 7755 (general), Fax: +44 20 7499 5388
www.mrag.co.uk

NRSP, HTSPE Ltd
Thamesfield House, Boundary Way
Hemel Hempstead
HP2 7SR. UK

Tel: +44 1442 202 400
Fax: +44 1442 266 438
www.nrsp.org.uk

MRAG Ltd
18 Queen Street
London
W1J 5PN. UK

Tel: +44 20 7255 7755 (general)
Fax: +44 20 7499 5388
www.mrag.co.uk