



# Tobago Cays Marine Park

## 2007-2009 Management Plan

Revised November 2007 Draft  
updated to include OPAAL Baseline Studies  
and related documentation



# **Tobago Cays Marine Park (TCMP)**

## **2007-2009 Management Plan**

**Revised November 2007 Draft  
updated to include OPAAL Baseline Studies  
and related documentation**

Prepared for:  
Organisation of Eastern Caribbean States (OECS)  
Environment and Sustainable Development Unit (ESDU)  
St Lucia

Funded by:  
The World Bank / GEF / FFEM / OAS under the  
OECS Protected Areas and Associated Sustainable Livelihoods (OPAAL) Project

Prepared by:  
Dr Daniel Hoggarth, UK  
in consultation with members of the Marine Parks Board of  
St Vincent and the Grenadines and other TCMP stakeholders

16 November 2007

# TABLE OF CONTENTS

<b>Executive Summary</b> .....	<b>7</b>
<b>Part 1. Background</b> .....	<b>8</b>
1. Introduction .....	8
1.1 A brief history of the ‘TCMP’ .....	8
1.2 Preparation of this plan and next steps .....	9
1.3 October 2007 revision of the plan .....	10
2. Guiding principles.....	11
3. Purpose, scope and duration of the management plan .....	11
4. Geographical setting of the site .....	13
5. Resource description .....	13
5.1 Physical resources .....	13
5.2 Biological resources .....	15
5.3 Cultural resources.....	21
5.4 Socio-economic resources.....	21
6. Past and present uses of the area .....	21
6.1 Tourism and recreation .....	22
6.2 Commercial uses .....	24
6.3 Hotels and restaurants.....	29
7. Existing legal, institutional and management framework.....	29
7.1 National level arrangements .....	29
7.2 Park level arrangements – the TCMP.....	31
8. Existing threats and implications for management .....	32
8.1 Natural threats to resources.....	33
8.2 Human threats to natural resources.....	33
8.3 Potential impacts of the TCMP on local stakeholders .....	34
<b>Part 2. Management Plan</b> .....	<b>35</b>
9. Mission of the TCMP.....	35
10. Goals and objectives.....	35
11. Institutional arrangements.....	36
11.1 National level management – the Marine Parks Board / Authority .....	38
11.2 Park level management – the TCMP.....	39
12. Boundaries .....	43
13. Zonation .....	43
13.1 Zone objectives and regulations .....	45
13.2 Development of zonation plan .....	50
14. Rules and Regulations .....	50
14.1 Entry to park.....	51
14.2 Boats .....	51
14.3 Snorkeling and scuba diving .....	52
14.4 Other water sports.....	52
14.5 Fishing.....	52
14.6 Infrastructure (buildings and moorings) .....	53
14.7 Resource extraction and pollution.....	53
14.8 General .....	54
15. User fees (park entry fees).....	54
15.1 Fee rates .....	54
15.2 Collection of park user fees .....	56
15.3 Concerns raised over the user fees system .....	57
16. Support of sustainable livelihoods in and around the park .....	58
16.1 Licensing of commercial operators .....	58
16.2 Other support for sustainable livelihoods within and around the TCMP .....	60

17.	Resource management.....	61
17.1	Biological resources.....	61
17.2	Mooring buoys.....	61
17.3	Maintenance.....	63
17.4	Garbage management.....	64
17.5	On-shore facilities.....	64
18.	Public education and awareness.....	66
19.	Safety and security arrangements.....	68
20.	Administration.....	68
20.1	Staffing.....	68
20.2	Monitoring assistants and internships.....	71
20.3	Training.....	71
20.4	Infrastructure and equipment.....	74
21.	Financial arrangements.....	77
21.1	Business plan.....	77
21.2	Income and expenses.....	77
21.3	Financial management.....	82
22.	Surveillance and enforcement.....	83
22.1	Offences and penalties.....	84
22.2	Authorised officers.....	84
22.3	Powers of authorised officers.....	85
22.4	Ticketing system.....	85
23.	Monitoring, evaluation and research.....	86
23.1	Monitoring and evaluation approach.....	86
23.2	Research.....	88
24.	Public and stakeholder consultation and involvement in management.....	90
25.	Management plan review process.....	90
26.	References.....	92
<b>Annex 1. Monitoring and evaluation framework.....</b>		<b>96</b>
A1.1	Relevant park experience in monitoring, evaluation and research.....	96
A1.2	Evaluation framework and indicators.....	97

### List of Tables

Table 1.	The twenty-five most frequently sighted fish species during roving diver surveys on Horseshoe Reef, with densities (number / 100 m <sup>2</sup> , mean ± standard error) for species recorded in belt transects. Percent sighting frequency = percent of dives in which the species was recorded. Source: Deschamps et al, 2003.....	20
Table 2.	Fish species observed by Ecoengineering (2007) during five roving dive surveys in the Tobago Cays not included in the list of Table 1.....	20
Table 3.	Scheduled visits of cruise ships to the Tobago Cays Marine Park for the 2006-07 season, and estimated numbers of park visitors.....	26
Table 4.	Responsibilities of government agencies for different types of parks and protected areas, as proposed by the new protected areas systems plan (IJA, 2004a).....	29
Table 5.	Summary of the SWOT analysis conducted by Ecoengineering (2007).....	32
Table 6.	First priority communication products for the TCMP.....	66
Table 7.	TCMP training requirements given by IJA (2004d).....	71
Table 8.	Training needs relating to the TCMP, as proposed by the OPAAL Training Needs Assessment (Parsram, 2007). Updates made to this table during the October 2007 revision of this plan show the training aspects already covered by the EU Tourism project, the training already provided (by OPAAL, the TCMP or others), and training aspects covered (either fully or partially) in the Sustainable Livelihoods subproject (see Section 16.2), marked 'OPAAL – SL project'. Other training needs identified as priorities by the October 2007 workshop to assist in the establishment of the TCMP are earmarked for OPAAL funding as 'OPAAL – TCMP development'.....	72

Table 9.	Preferred methods of training delivery for different stakeholder groups, as identified by Parsram (2007). ....	74
Table 10.	Estimated current annual operating costs (all figures in EC\$).....	77
Table 11.	Estimated current capital and other costs including funding allocations from external project as agreed at October 2007 (see following section) (all figures in EC\$).....	78
Table 12.	Estimated income from user fees as proposed in Box 3. ....	80
Table 13.	Checklist of main action points required under this 2007-2009 plan, and the proposed implementation years. Items proposed for OPAAL financial support are marked 'O'. ....	91

## List of Figures

Figure 1.	The location of the Tobago Cays in the southern waters of the St Vincent Grenadines (source: Espeut, 2006).....	13
Figure 2.	The islands and reefs of the Tobago Cays Marine Park ( <i>Photo: Paul Gravel, SVG Air, with labels by Espeut, 2006</i> ).....	14
Figure 3.	The beaches of the Tobago Cays: Jamesby (top); the east beach on Petit Bateau with the picnic site and fire-burnt hillside behind (left); discarded conch shells on Petit Rameau (right); and Baradal (bottom).....	16
Figure 4.	Yachts anchored in the Tobago Cays 'lagoon', including over the sea grass bed south of Baradal. Note the larger cruise liner yacht at anchor behind Petit Rameau. Photograph taken August 1992. ....	23
Figure 5.	The Grenadines Dive shop in Clifton, Union Island. ....	25
Figure 6.	Two of the boats currently running day trips to the Cays, including for passengers from cruise liners. <i>Photos: Wind and Sea Ltd web site</i> .....	27
Figure 7.	Water taxis hauled out at Clifton, Union Island, and one landing a vendor in the Cays...	27
Figure 8.	Vendor sites on Petit Bateau, out of use in the 'off season': strings tied between trees for displaying T-shirts for sale (left); BBQ pits and dining tables (right).....	28
Figure 9.	The current organisational arrangement for the TCMP. ....	37
Figure 10.	Proposed organisational structure for the TCMP.....	41
Figure 11.	Draft zone map for the TCMP. ....	45
Figure 12.	The 'hiking trails' across Petit Bateau: (left) the low path between the two beaches; and (right) the more overgrown path via the top of the hill, through the fire-burnt area. ....	65
Figure 13.	The new TCMP office in Clifton, Union Island. ....	75
Figure 14.	One of the current TCMP patrol boats, hauled out at Clifton.....	75
Figure 15.	The action-reflection development cycle (Source: Hope and Timmel, 1984). ....	87

## List of boxes

Box 1.	The ten members of the Marine Parks Board, as required by the 1997 Marine Parks Act. ....	38
Box 2.	Marker buoy types (based on definitions of Cordice, 1998) ....	48
Box 3.	TCMP entry fees, licenses and permits, as agreed by cabinet on 1 November 2006 (all in EC\$). ....	55
Box 4.	Per-person entry fees proposed in previous TCMP plans (all EC\$ except where stated, and all per 24 hours except Heyman, and ECLAC?).....	57
Box 5.	Other taxes and licence fees paid by visitors and commercial operators in St Vincent and the Grenadines.....	57
Box 6.	Guiding principles relating to the provision of services by licensed operators within the TCMP (based on IJA, 2004c).....	59
Box 7.	Some arguments for and against mooring buoys. ....	62
Box 8.	Example content for the proposed 'park entry signs'. ....	67
Box 9.	Responsibilities of the park manager and warden, as defined in the Marine Parks (Tobago Cays) Regulations, 1998. ....	70
Box 10.	Proposed duty rota for the two teams of TCMP rangers. ....	70
Box 11.	Specifications of the two proposed TCMP vessels (IJA, 2004c). ....	75
Box 12.	Specifications of the proposed ranger outpost station (IJA, 2004c). ....	76

## Acknowledgements

The preparation of this management plan was funded by the Global Environment Facility (GEF) through the World Bank, the Organisation of American States (OAS) and the Fond Français de L'Environnement Mondial (FFEM). The views expressed herein are those of the author and do not necessarily reflect the views of the donor agencies supporting the activity or of the OECS Secretariat.

Thanks are due to the many stakeholders in St Vincent and the Grenadines who provided both information and ideas for this document.

All photographs were taken by Dr D.D. Hoggarth, except where indicated.

*Cover photo: the Tobago Cays surrounded by Horseshoe Reef in the foreground, with Palm Island (left), Union Island (centre) and Mayreau (right) in the background. By Mr Jean Marc Saily, reproduced with permission.*

Dr Daniel D. Hoggarth  
28 Woodfield Crescent  
London W5 1PD  
UK

Tel: +44 (0) 20 8810 7076  
Fax: +44 (0) 87 1253 8845  
Mobile: +44 (0) 79 6266 3114  
Email: [dhoggarth@gmail.com](mailto:dhoggarth@gmail.com)

Revised Draft Management Plan: 16 November 2007

## Executive Summary

The Tobago Cays Marine Park (TCMP) was gazetted in 1997 under the legal authority of the 1997 Marine Parks Act of St Vincent and the Grenadines. A national Marine Parks Board was also established by the 1997 Act to oversee the management of the TCMP and any future marine parks. The first and only Regulations for the park were passed in 1998 and a first draft management plan was prepared in the same year. Since then, the park has faced a number of problems. The park regulations have not been well enforced; park fees have not been collected; and the first draft management plan was never officially adopted. Revised management arrangements were proposed by the park management in 2000, but the problems continued. In 2003, two proposals were submitted for the management of the park to be handed over to non-government agents, one by the nearby Palm Island Resort, and one by the Mayreau Environmental Development Organization (MEDO). After much public discussion, neither of these proposals was accepted. Since then, the Marine Parks Board has continued its management efforts but with limited stakeholder support or participation in decision making. This plan attempts to clarify the existing basis for the management of the TCMP, and defines the objectives and processes that should guide its future development.

The duration of the management plan is the three-year period from January 2007 to December 2009. This includes the five years, 2005-2009, when some of the management needs of the TCMP will be supported by the OECS Protected Areas and Associated Sustainable Livelihoods (OPAAL) project. It also includes three years, 2007-2009, when the TCMP will be further supported by the EU-funded Tourism Development Programme. The management plan is due for review in late 2009, but interim revisions may be prepared before then to reflect the additional inputs of these two projects.

Part 1 of the plan describes the natural resources of the TCMP, its main uses and threats and the existing legal basis for marine park management in St Vincent and the Grenadines. Part 2 defines the mission, goals and objectives of the TCMP: to protect and enhance the Cays' natural resources while also allowing for their sustainable and equitable use by local people and visiting tourists. From these foundations, Part 2 proceeds to describe a new, more participatory organisational framework for the TCMP; the zonation of the park and the regulations on its use; the arrangements for entry fees and licensing of commercial operators; the needs for public education and awareness; and the arrangements for surveillance and enforcement, and monitoring, evaluation and research. Sections 20 and 21 outline the administrative and financial arrangements for the park: detailed budgets remain to be prepared by the park management.

The plan emphasizes the importance of understanding the whole *system* that is being managed. This includes not just the Cays, and their fish and coral reefs, but also the different people who depend on those resources, the policy and regulatory frameworks, and the capacity of the management team. The plan promotes a *people-centred* and *participatory approach*, directly involving resource users in key management decisions. It also promotes *adaptive* management solutions in which the park goals may be achieved by monitoring and learning, and improving the results gradually over time.

This management plan was prepared under a sub-project of the OPAAL project, funded by the Global Environment Facility (GEF) and managed by the OECS Environment and Sustainable Development Unit. Thanks are due to the TCMP staff, other government officers and other TCMP stakeholders in Union Island, Mayreau and St Vincent who contributed their ideas during the meetings and consultation workshops held in October-November 2006 and February 2007.

# Part 1. Background

## 1. Introduction

### 1.1 A brief history of the 'TCMP'

The islands of Mayreau and the Tobago Cays were under private ownership from at least the 16<sup>th</sup> Century up until 12 April 1999, when the Cays were purchased after long negotiations by the state of St Vincent and the Grenadines. The purchase was restricted to the five islands of the Cays, while the larger island of Mayreau remained in private hands. The early history of Mayreau and the Tobago Cays is well described by MEDO (2003).

In 1985, the Government of St Vincent and the Grenadines (GOSVG) requested assistance from the Organization of American States (OAS) for developing tourism within the Grenadines. This led to a detailed proposal for the formation of a 'Tobago Cays National Park' with initial investment costs estimated at US\$ 1 million (Heyman 1988).

In 1987, the Fisheries Division of the GOSVG established the Tobago Cays as a 'conservation area', along with nine other such areas, in which spear fishing was prohibited. The rectangular boundary of this area included the whole of Mayreau, the Cays and most of the coral reefs, but was slightly smaller than the area now designated as a marine park (see later, Figure 11). It has also been pointed out (ECLAC, 2002; IJA, 2004a) that the 1986 Fisheries Act only provided for the designation of *marine reserves*, not *conservation areas*.

In September 1993 (as described by Espeut, 2006), the governments of France and St. Vincent and the Grenadines signed and launched the Tobago Cays Marine Park Project and produced an updated Action Plan (FMC, 1995).

In 1995 while the Tobago Cays were still under private ownership, Cabinet then approved a proposal to establish the Tobago Cays Marine Park (TCMP) including the island of Mayreau. On 25 November 1997, the Government enacted the Marine Parks Act and thereby created a Marine Parks Board that was to oversee the management and conservation of the TCMP, and any other marine parks to be designated in future.

The Tobago Cays were then declared a marine park in December 1997 by order published in the Official Gazette No. 40 of that year. Cabinet appointed the first Marine Parks Board in May 1998. On 8 July 1998, the Government gazetted the Marine Parks (Tobago Cays) Regulations, and in August 1998 a draft copy of the Tobago Cays management plan was submitted to the Marine Parks Board (Cordice, 1998).

At this point, a series of problems began to appear. The regulations enacted for the park were not implemented, nor was the proposed fee structure, and the first draft management plan was never officially endorsed or adopted. A set of revisions to the management plan was prepared in July 2000 (Cordice, 2000), but this also was never formally approved. Part of the problem was the uncertainty in the legal status and boundaries of the park. It has since been observed that the 1997 designation as a 'marine park' only included the actual islands of the park, and none of the surrounding sea area (Espeut, 2006).

In November 2001, a study by Caribbean marine park manager, Tom van't Hof (ECLAC, 2002), described the slow progress with implementation up to this time and outlined some of the



problems. With legal discrepancies in the appointment of its members, the board ceased to operate in 2001, and French financial assistance to the park was discontinued at the end of that year.

Since this time, various studies have been conducted, and alternative plans put forward for management of the park. In May 2003, it was announced that the Government was considering a proposal for the day to day management of the Tobago Cays to be contracted to the nearby but foreign-owned Palm Island Resort. While the proposal clearly provided some attractions for government, not least a guaranteed income from the park, there were also concerns over the proposer's apparent prioritization of profitability over biodiversity conservation. The plan would have seen several structures erected on the islands and the concept of handing a prized national asset to a private company caused a public outcry.

In September 2003, a local NGO – the Mayreau Environmental Development Organization (MEDO) – then submitted a counter-proposal to the Marine Parks Board. The Palm Island proposal was eventually withdrawn by the resort company, and in the end, neither proposal was accepted by government.

In the meantime, additions were being suggested to the 'management plan' for the park, but still little was happening on the ground. Subventions provided by government paid the salaries of some park staff, but were usually insufficient to keep the boats running and maintain a regular presence in the park.

At the present time, the Marine Parks Board (that was created to oversee the management and conservation of all marine parks in SVG), functions as the Board of Management for the TCMP, overseeing its day to day operations. The current arrangement lacks local involvement in decision making and gives too much responsibility to the board for operational matters rather than policy issues and national coordination. With four other marine parks proposed in the 2004 Protected Areas Systems Plan (IJA, 2004a), there is an urgent need to put the management of the TCMP and any future marine parks on firmer ground. Progress towards this was made in 2005 with the preparation of a fully revised draft Marine Parks Bill, but further challenges remain (see Section 7.1).

The most critical management needs for the TCMP were recently identified by the board and other stakeholders (OPAAL, 2006) as (1) the development and implementation of an appropriate management plan which incorporates effective administrative and public awareness building frameworks, and (2) the introduction of effective enforcement and revenue collection.

Towards these aims, the TCMP was 're-launched' by government on 2 December 2006 at a ceremony in Union Island, coinciding with the start of the main 2006-07 tourist season. From this time, the park administration has implemented a new user fee policy, as approved by cabinet on 1 November 2006.

## **1.2 Preparation of this plan and next steps**

The preparation of this management plan was supported by a sub-project of the OECS Protected Areas and Associated Sustainable Livelihoods (OPAAL) Project, as funded by the Global Environment Facility (GEF). The preparation of a management plan for the TCMP was selected by the GOSVG as a national priority under the project. Additional funding available

under the OPAAL project for capital investments and management needs at the TCMP demonstration site will not be released until this management plan has been approved.

The first draft of this TCMP management plan was prepared based on the contents of the various previous plans and other relevant documents, and following discussions with stakeholders during visits to Kingstown, Union Island and Mayreau over the period 27 October to 8 November 2006. Given the wealth of information available in the various existing management plans and other documents, the first draft plan mainly attempted to draw together the existing proposals into a structured and strategic framework. In preparing for the OPAAL project, SVG stakeholders confirmed that new endeavours in the TCMP “*should build upon previous initiatives, yet should be more effective, particularly in terms of building stakeholder ownership, accountability, and conflict resolution processes*”.

Feedback from stakeholders was sought on the proposals in the first draft plan at consultation workshops in Kingstown and Union Island during the week of 29 January to 2 February 2007. This second draft was prepared following those consultations.

As identified by Byrne (2005), a number of gaps remain in the information needed for the management plan. Several of these gaps are identified in the different sections of this plan as action points to be followed up over the next three years (see summary of required actions in Section 25). Detailed plans and timelines for these actions now need to be made by the park staff and the Marine Parks Board as part of the implementation of the plan.

### **1.3 October 2007 revision of the plan**

This revised version of the 2007-2009 management plan was prepared in October 2007 under a follow-up activity of the OPAAL project. The revision was undertaken primarily to incorporate the outputs of the ‘environmental and socio-economic site assessments’ (also known as the ‘baseline studies’) into the management plan. Under the OPAAL plan, these studies should have been conducted prior to the writing of the management plan so as to assess the status of the environmental and socio-economic resources within the site, identify the key threats at each site along with options for mitigation and inform monitoring and evaluation for the site. In the event, challenges during project implementation did not allow for the baseline studies to start until after the drafting of the site management plan for this site.

During this revision of the plan, the information in other documents prepared under the OPAAL project was also reviewed and incorporated where appropriate. These documents included the ‘livelihoods assessment’ (Espeut, 2006), the ‘training needs assessment’ (Parsram, 2007) and the ‘communications plan’ (Fontenard, 2007) prepared for this site. Efforts were also made to identify and prioritize those elements of the management plan (e.g., infrastructure, equipment, training, livelihoods development) which are suitable for OPAAL support.

The revision of the plan was undertaken by OPAAL consultant, Dr Daniel Hoggarth. Key decisions on proposed changes to the management plan were guided by a workshop involving national and local TCMP stakeholders, held in Kingstown, St Vincent on 11 October 2007.

## 2. Guiding principles

This management plan is based on a number of guiding principles, as outlined below. These principles were drafted by the consultant in preparing the plan and revised to include the suggestions of stakeholders at the 2007 consultations.

1. The social and economic development of people and communities must be based on the rational and sustainable use of their natural resources. *Sustainable development* must allow for the needs of both present and future generations. Conservation must be an integral objective and component of all management and development programmes.
2. The benefits to be derived from the TCMP must be shared as *equitably* as possible, and must contribute to addressing the most pressing social and economic problems in the southern Grenadines.
3. Management of the TCMP, like any other shared public resource, should be people-centred and *participatory*. Stakeholder input in management decisions is vital for success.
4. The dynamic nature of the natural and human environment requires *flexible* management solutions. An *adaptive* approach is recommended, that recognises the complexity of management issues and develops management strategies based on learning and feedback. Such feedback requires monitoring of both the state of the system and the various factors likely to be affecting it.
5. The management of natural resources should be based on an *integrated* and *inter-disciplinary* approach. Changes in the natural resource base may be due to a range of factors, such as pollution, fishing, tourism, hurricanes or management actions, each of which must be well understood if good management decisions are to be made.
6. The TCMP shall contribute as far as possible to the delivery of St Vincent and the Grenadines' commitments under international agreements, such as the Convention on Biological Diversity and the SPAW Protocol.

## 3. Purpose, scope and duration of the management plan

The Tobago Cays are recognized as the 'jewel in the crown' for marine tourism in the Southern Grenadines. The glorious scenery of the Cays makes it one of the best known and most popular tourist destinations in the region. Historically, the Cays also supported a small local fishing industry, giving an important local source of income and employment. Overuse from both tourism and fishing has damaged these valuable resources. To sustain livelihoods and other opportunities for future generations, the natural beauty and biodiversity of the Cays must be protected and preserved.

Towards these aims, the GOSVG established the Tobago Cays as a marine park with a mission to protect, conserve and improve the natural resources of area. The purpose of this management plan for the TCMP is to provide a framework for understanding the values and needs of the TCMP, and to outline the resources, facilities and personnel needed to manage the

area. The plan guides and controls the management of the TCMP but should also be regarded as a working document that will be subject to review at regular intervals in the future.

The arrangement of sections in the plan follows a template provided by OECS for the OPAAL project, with minor adjustments. As commonly used in such management plan documents, Part 1 provides the background information and justification for the plan, while Part 2 describes the various objectives and the means by which they are to be achieved:

- Part 1 of the plan describes the resources of the Tobago Cays – physical, biological and cultural – and the threats they face; in addition to the various different opportunities and livelihoods that the park provides for different users.
- Part 2 defines the goals and objectives of the TCMP and the administrative structure and management tactics to be adopted. These include a zonation plan, the regulations guiding different uses; and the arrangements for monitoring and enforcement. The financial arrangements include a business plan for achieving long-term self-sufficiency.

The management plan covers a three year period, 2007-2009. Noting the various gaps in the document, further details may be added to the plan during this initial period. Some of these additions may arise from other OPAAL activities, particularly in the training and communications sections. The plan should be reviewed, and updated in three years time, around the end of 2009.

## 4. Geographical setting of the site

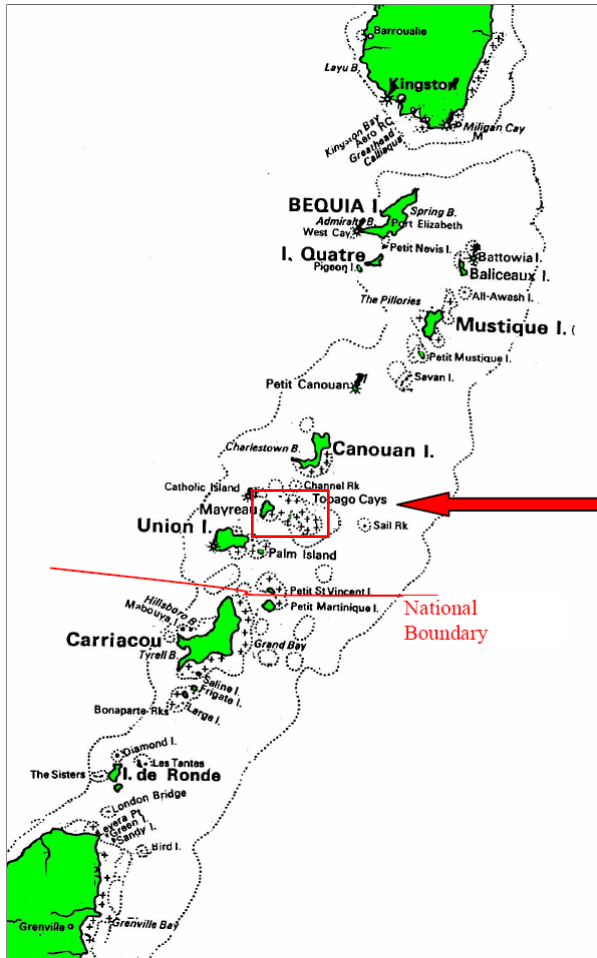


Figure 1. The location of the Tobago Cays in the southern waters of the St Vincent Grenadines (source: Espeut, 2006).

The Tobago Cays are located in the Grenadines chain of islands, in the southernmost waters of the state of St Vincent and the Grenadines (Figure 1). Four of the Cays – Petit Rameau, Petit Bateau, Jamesby and Baradal – are enclosed within the aptly-named Horseshoe Reef, while the fifth Cay – Petit Tabac – lies just to the east of the main group (Figure 2). Surrounding the islands is a series of other reefs and shallows, including Egg Reef and World’s End Reef on the eastern side, and Mayreau Gardens to the west.

The Cays themselves are all uninhabited. Populated islands nearby include Mayreau, which lies inside the park boundary on the western side, Canouan to the north, and Union Island to the south-west. The tourist resorts, Palm Island and Petit St Vincent lie to the south of the park. Just across the border with Grenada are the other Grenadine islands of Carriacou and Petit Martinique (Figure 1).

The Tobago Cays Marine Park is rectangular in shape with boundaries as listed in Section 12. The park has a total area of approximately 66 km<sup>2</sup>.

## 5. Resource description

### 5.1 Physical resources

Above the waterline, the TCMP includes the four main islands of the Cays, Petit Tabac to the east and the larger privately-owned island of Mayreau to the west. Three smaller islands are also found in the north of the park, Catholic Island, Jondall and Mayreau Baleine. Lacking beach facilities and anchorages, these small islands are less attractive to yacht-based tourists. Below the waterline, the park includes the 4km long Horseshoe Reef, Mayreau Gardens, World’s End and Egg reefs.

The picturesque islands and shallow waters make the area very attractive for yachting, snorkelling and scuba diving. The isolated Petit Tabac was used as a location for the recent ‘Pirates of the Caribbean’ films.



**Figure 2.** The islands and reefs of the Tobago Cays Marine Park (Photo: Paul Gravel, SVG Air, with labels by Espeut, 2006).

Heyman et al (1988) described 14 beaches in the TCMP; 7 on Mayreau, and 7 among the actual Cays. These beaches are intensively used by visitors and are one of the most important assets of the park. As shown in Figure 3, Jamesby presents a narrow and very marketable white beach, lined with coconut trees. Many day charter boats anchor off this beach. The beaches on the most northerly cay of Petit Rameau have been almost lost underneath huge piles of conch shells, left by fishermen in years gone by (Figure 3).

The wreck of the HMS Puruni (known locally as the Purina) lies off the west coast of Mayreau. A 42m English gunboat that sank in 1918, the Puruni is a popular dive site but was recently badly damaged by a cruise liner anchor.

Mayreau is the largest island within the park with a highest point of 99m above sea level. With most of the population of around 250 living on the sheltered, western side of the island, the eastern hillside is currently undeveloped and provides a natural backdrop to the islands of the Cays. Although it has been proposed that all development on this side of the island should be prohibited, it is understood that plots of land have recently been sold to private developers.

The islands lie on a shelf which in the region of the Grenadines extends up to three times further to the east of the main chain of islands than to the west. The sea bed slopes away rapidly after the 50m depth contour. The shelf is conducive to the formation of many coral reefs.

The dominant ocean currents in the area flow from the east-southeast at a speed of up to 3 knots (Parsler, 1989 and Mills, 2001 in Ecoengineering, 2007). These currents bring seasonal influxes of surface water from the Amazon and Orinoco estuaries. This prevailing flow is reversed by a weaker, shorter duration tidal flow from the west to the east every day.

Water quality at four locations inside the park was studied by CERMES in 2006 (as summarised in Ecoengineering, 2007). Despite some problems with quality control in handling the samples, the survey reported oxygen levels below good environmental standards and faecal coliforms above standard levels in some months (see Ecoengineering, 2007 for details). The survey also found that mean turbidity was lowest in May and highest in August, and above good environmental standards in three of the four sampled months (May, July, August and September of 2006).

## 5.2 Biological resources

The waters and islands of the Tobago Cays provide a range of different habitats, most notably a variety of coral reef formations and the dry forest and beach vegetation on the islands. Useful information on these resources is available in several historical documents, as summarized below. Further studies are required to identify critical areas of habitat (e.g. as used for nesting, or spawning); and to prepare full lists of species found in the park, including endangered and endemic species.

### 5.2.1 Terrestrial resources

The land area of the TCMP, i.e. the island of Mayreau and the smaller Cays, comprises approximately 5% of the total area of the park. Principal vegetation types include beach vegetation and dry forest. The beaches provide nesting habitats for hawksbill turtle.

Charlier (2004) lists four TCMP species as 'threatened, rare or endangered' indicators of global biodiversity significance:

- iguana (*Iguana iguana*),
- red-necked pigeon (*Colomba squamosa*)
- hawksbill turtle (*Eretmochelys imbricata*); and
- leatherback turtle (*Dermochelys coriaces*)

Important migratory species are further listed as:

- Zenaida dove (*Zenaida auriculata*)
- sea gulls (*Larus* spp.)
- frigate bird (*Fregata* spp.)
- brown pelican (*Pelecanus occidentalis*)
- brown booby (*Sula leucogaster*)
- bridled tern (*Sterna antillarum*)
- red-billed tropicbird (*Phaeton aethereus*)
- sooty tern (*Sterna fuscata*)
- common tern (*Sterna hirundo*)





**Figure 3. The beaches of the Tobago Cays: Jamesby (top); the east beach on Petit Bateau with the picnic site and fire-burnt hillside behind (left); discarded conch shells on Petit Rameau (right); and Baradal (bottom).**



In the mid 1980s, Heyman et al (1988) reported that the introduction of goats had upset the ecology of the islands, and that iguana and Zenaida dove (also known as the violet eared dove) were endangered and in need of protection. The goats still remain on Petit Rameau in small numbers, the iguana are reportedly still present on Jamesby at least, but the dove is no longer found in the Cays (Jacques Daudin, personal communication). The Ramier bird or rednecked pigeon, *Columba squamosa*, was reported as absent from the Cays in 1987, though limited numbers were then present on Union Island (Heyman et al, 1988).

### **5.2.2 Coastal resources**

With the exception of a small mangrove in Petit Rameau and the salt pond in the south of Mayreau island, there are no coastal wetlands in the Cays. Given its small size, the mangrove habitat requires protection against further loss or degradation.

The salt pond in the lowland part of Mayreau was used in the past for salt production by evaporation. Heyman et al (1988) suggested it should not be filled in as it protects Saline Bay and Windward Bay by trapping sediments washed off the surrounding steep slopes. There has been some talk in recent years of developing the salt pond into a commercial marina.

### **5.2.3 Marine resources**

#### ***Coral reefs***

The Horseshoe reef surrounding the Tobago Cays is considered the largest reef in the country. This and the fringing reef around Petit Tabac are, in places, exceptional in terms of their biological and conservation value. Both reef systems exhibit a classic reef zonation pattern, with a well-defined fore reef, reef slope and reef crest (CCC, 2002). As described below, the more sheltered Mayreau Gardens reefs provide a range of different habitat types and contain the most biodiverse parts of the park.

The coral reefs of the TCMP were first studied over a series of 18 dives in 1987 by the OAS study team. Detailed site locations and faunal inventories were provided by Heyman et al (1988, Annex 1). This information remains, along with a set of underwater photographs at selected sites, as a valuable record of the state of the marine environment at that time. In summarizing their observations, Heyman et al described the different reefs in four categories as below:

*Class 1, Excellent: the reefs between Mayreau and the Cays appeared to be undisturbed and had numerous large snappers, groupers and jacks that were generally absent from all the other reefs surveyed.*

*Class 2, Good: includes parts of Horseshoe Reef – the northwest end and the section southwest of the small boat pass, most of World’s End Reef and Egg Reef, and the reefs around Petit Tabac. These showed good reef formation but reduced fish populations, probably as a result of spear fishing. Their generally good health justifies protection...*

*Class 3, Fair: corals around the lagoon were generally in degraded condition, often partly or wholly overgrown with an algal turf, but with occasional healthy-looking examples and varying numbers of reef fish. They were generally attractive enough to have some value as a snorkelling attraction.*

Class 4, Poor: corals and alcyonarians around Jamesby appeared the most degraded, with even sea fans covered with algae, and much reduced fish populations. Limited value for snorkelling.

Heyman et al thus described Mayreau Gardens in particular as “the jewel of the Tobago Cays”, and the area most worthy of special protection. In the other areas, the abundance and diversity of fish and other marine life was reported to have declined significantly since previous visits ten years earlier.

Heyman et al listed the most likely causes of the observed decline in the coral reefs as white band disease in the case of elkhorn coral (*Acropora palmata*), the low numbers of long-spined sea urchins (*Diadema antillarum*) since the mass mortality of 1983, and pollution from yachts. The latter factor was suggested as a key potential impact on the reefs as the worst conditions were found in Jamesby, directly downstream from the main anchorage in the lagoon.

In the mid 1990s, the French Mission for Cooperation and the SVG Fisheries Division (FMC & FD, 1995) began a ‘reef monitoring programme’ based on the use of photoquadrats at 15 fixed stations, 5 each adjacent to Horseshoe Reef (on the lagoon side, north of Baradal), Petit Rameau and Jamesby. Two surveys were conducted: in June 1994, and in January 1995. In June 1994, at these sites, living coral cover ranged from 21.1% at Horseshoe Reef down to 12.3% at Jamesby. Over a period of only six months, coral cover declined on average by nearly 5% from 15.6% overall in June 1994 to 14.9% in January 1995. The lowest levels of cover and the greatest decline were both at Jamesby. At these sites, the most abundant hard coral species were, in order of decreasing abundance: *Montastraea annularis*, *Siderastrea siderastrea*, *Porites astreoides*, *P. porites*, *Colpolphyllia natans*, *Diplora strigosa* and *Millepora alcicornis*.

In 1999, Deschamps et al (2003) found that the fore reefs at Horseshoe Reef had an average live stony-coral cover of 30% at 3-4 m and nearly 40% at 9-11 m. Sixteen species of large stony corals were observed, dominated overall by *Montastraea annularis*, *Porites astreoides*, *P. porites*, *Montastraea faveolata*, *Millepora complanata*, *Colpolphyllia natans*, and *Siderastrea siderastrea*. Live colonies of *Acropora palmata*, which were reported as dead and dying by Heyman et al in 1987, had virtually disappeared. These authors agreed that their demise at Horseshoe Reef, was probably due to the white-band disease that affected much of the Caribbean region during the late 1980s. The relative abundance of small colonies of the large reef-building corals was also cited as an indication of a reef system with adequate juvenile input, then recovering from the 1998 coral bleaching.

Deschamps et al (2003) suggests that the reef declines in the Tobago Cays reflect the combined impacts of physical damage from storms, anchors, and fishing gear, as well as from white-band disease, other diseases, and localized nutrient pollution from yachts. Espeut (2006) dived twice in the TCMP area in 2006, once outside horseshoe reef and once in Mayreau Gardens, and found the reefs to be “among the worst in terms of algal overgrowth”. He agreed with the diagnosis that eutrophication or nutrient pollution from all the yachts was the likely cause of such localised changes to the reefs. The impact of Hurricane Ivan in 2004 may also be a factor.

The most detailed recent study of the Tobago Cays reefs was conducted by volunteers of the Coral Cay Conservation NGO in 2002. Following 112 survey dives covering over 6 km of reefs, CCC confirmed earlier findings that the coastline around Mayreau Island, and the Mayreau Gardens reefs in particular, support the highest diversity habitats.

CCC (2002) described 23 different habitat types, according to their species compositions. After Mayreau Gardens and the Mayreau coastline, the Horseshoe and Petit Tabac reefs were the next richest areas, and the Worlds End and Egg reefs were the least diverse. The latter were reported as being “*dominated by an extant reef platform now colonised by colonial zoanthids, fire corals of the genus Millepora sp. and red calcareous algae*”.

CCC (2002) also emphasised the importance of the tidal channels that bisect areas of harder substrate within Mayreau Gardens. Lying to the leeward side of Horseshoe reef, and less exposed to physical impact, the Gardens nevertheless experience strong tidal currents. The bases of the tidal channels are composed of soft sediments with dispersed hard substrate. Filter and suspension feeding organisms including soft corals and sponges predominate in these areas. The sides of the channels support the highest diversity of all habitats in the Cays, with a total of 106 species of sessile organisms found in this habitat type. The proper management of these unique channel systems is essential. With such high diversity, they are likely to act as important larval supply areas; providing an important source for the repopulation of surrounding areas.

Areas for protection under the TCMP zonation plan should be selected from the maps prepared by CCC (2002) and in consultation with local divers. It is understood that another dive survey is now being planned by CCC for the Tobago Cays.

The TCMP reefs have also recently been assessed by the CERMES ‘Enhancing Management Effectiveness’ project, conducted in partnership with TCMP staff (Pena, 2006; McConney, 2007). Based on ‘Reef Check’ surveys (see [www.reefcheck.org](http://www.reefcheck.org)) conducted at four sites in March 2005, and May and October 2006, this project found that the TCMP coral reefs are still declining. Compared to other areas, fish species diversity was found to be low at all four sites. Two sites on the Horseshoe reef had lower diversity than those at Petit Bateau and Petit Tabac.

The ‘baseline studies’ of coral reefs undertaken by Ecoengineering Caribbean Ltd for the OPAAL project in 2007 further confirmed the degraded state of the park’s coral reef resources. Ecoengineering (2007) reported that “Most sites within the TCMP were dominated by dead coral rubble and had live coral cover between 5% and 45%”. Eighteen species of coral were observed.

### **Sea grass**

The only sea grass bed in the park lies inside the ‘lagoon’ just to the south of Baradal. Although this has been degraded by anchoring, it still provides a habitat for small fish (CCC, 2002) and for turtles. Some respondents suggest that the sea grass once covered a much larger area of the lagoon before it was destroyed by the frequent anchoring. Whatever the original extent, this small patch of sea grass is likely to be of critical importance to the diversity and function of all surrounding habitats and should be protected from further damage by limiting anchoring in this location.

### **Fish**

In 1999, Deschamps et al (2003) recorded eighty-one species of fish during surveys at Horseshoe Reef. At this time, fish populations were dominated by herbivorous scarids (parrotfishes) and acanthurids (surgeonfishes) (Table 1). Herbivores also accounted for most of the fish biomass recorded on the reef. Commercially valuable serranids, lutjanids and haemulids (groupers, snappers and grunts) were present only in low densities (<1 individual /

100m<sup>2</sup>), indicative of over fishing. Deschamps et al further reported that it was not common to see fish larger than 30 cm total length on Horseshoe Reef, also suspected to be due to the larger fish being targeted for harvest.

A similar situation, with few large fish was also reported around the Tobago Cays and Horseshoe reef by Heyman et al (1988) back in 1987, presumed due to spear fishing. In contrast, however, Heyman et al found large game fish (groupers, hinds, coneys, mahogany and yellow snappers, bar jacks, rainbow runners and barracuda) in abundance at their dive sites in the Mayreau Gardens. In five roving diver surveys in January 2007, Ecoengineering (2007) observed a Nassau grouper at one site, and some bar jacks and barracuda, but few other such large fish species (see Table 2). Fish abundance levels were not reported.

**Table 1. The twenty-five most frequently sighted fish species during roving diver surveys on Horseshoe Reef, with densities (number / 100 m<sup>2</sup>, mean ± standard error) for species recorded in belt transects. Percent sighting frequency = percent of dives in which the species was recorded. Source: Deschamps et al, 2003.**

Fish Species		Sighting frequency (%)	Density
Brown Chromis	<i>Chromis multilineata</i>	100	-
Blue Chromis	<i>Chromis cyanea</i>	100	-
Stoplight Parrotfish	<i>Sparisoma viride</i>	100	10.8 ± 3.2
Redband Parrotfish	<i>Sparisoma aurofrenatum</i>	100	5.9 ± 1.8
Yellowtail Damselfish	<i>Microspathodon chrysurus</i>	100	5.0 ± 3.2
Yellowhead Wrasse	<i>Halichoeres garnoti</i>	100	-
Blue Tang	<i>Acanthurus coeruleus</i>	100	3.6 ± 4.6
Yellow Goatfish	<i>Mulloidichthys martinicus</i>	100	-
Trumpetfish	<i>Aulostomus maculatus</i>	100	-
Clown Wrasse	<i>Halichoeres maculipinna</i>	100	-
Bluehead Wrasse	<i>Thalassoma bifasciatum</i>	90	-
Creole Wrasse	<i>Clepticus parrai</i>	90	-
Bicolor Damselfish	<i>Stegastes partitus</i>	90	-
Threespot Damselfish	<i>Stegastes planifrons</i>	90	-
Mahogany Snapper	<i>Lutjanus mahogoni</i>	90	0
Longspine Squirrelfish	<i>Holocentrus rufus</i>	90	-
Sharpnose Puffer	<i>Canthigaster rostrata</i>	90	-
Princess Parrotfish	<i>Scarus taeniopterus</i>	80	4.7 ± 3.3
Queen Parrotfish	<i>Scarus vetula</i>	80	5.2 ± 6.8
Redlip Blennie	<i>Ophioblennius atlanticus</i>	80	-
Ocean Surgeonfish	<i>Acanthurus bahianus</i>	80	2.1 ± 1.1
Yellowtail Hamlet	<i>Hypoplectrus chlorurus</i>	80	-
Sergeant Major	<i>Abudefduf saxatilis</i>	70	-
Striped Parrotfish	<i>Scarus croicensis</i>	70	3.7 ± 1.5
Creole-fish	<i>Paranthias furcifer</i>	70	-

**Table 2. Fish species observed by Ecoengineering (2007) during five roving dive surveys in the Tobago Cays not included in the list of Table 1.**

American White Spotted Filefish	<i>Cantherhines macrocerus</i>
Banded Butterflyfish	<i>Chaetodon striatus</i>
Bar Jack	<i>Caranx ruber</i>
Cleaning Goby	<i>Gobiosoma genie</i>

Doctorfish	<i>Acanthurus chirurgus</i>
Fairy Basslet	<i>Gramma loreto</i>
Foureye Butterflyfish	<i>Chaetodon capistratus</i>
French Grunt	<i>Haemulon flavolineatum</i>
Goldspot Goby	<i>Gnatholepis thompsoni</i>
Great Barracuda	<i>Sphyraena barracuda</i>
Green Moray	<i>Gymnothorax funebris</i>
Grey Angelfish	<i>Pomacanthus arcuatus</i>
Harlequin bass	<i>Serranus tigrinus</i>
Lane Snapper	<i>Lutjanus synagris</i>
Nassau Grouper	<i>Epinephelus striatus</i>
Porkfish	<i>Anisotremus virginicus</i>
Rock Beauty	<i>Holacanthus tricolor</i>
Schoolmaster Snapper	<i>Lutjanus apodus</i>
Slippery Dick	<i>Halichoeres bivittatus</i>
Small mouth Grunt	<i>Haemulon chrysargyreum</i>
Smooth Trunkfish	<i>Lactophrys triqueter</i>
Spotfin Porcupinefish	<i>Diodon hystrix</i>
Spotted Goatfish	<i>Pseudupeneus maculatus</i>
Squirrelfish	<i>Holocentrus adscensionis</i>
Striped Parrotfish	<i>Scarus iseri</i>

### 5.3 Cultural resources

Remains of both Carib and Arawak settlements have been found on Mayreau, as on Union Island, but not any of the islands of the Cays. From the colonial era, the remains of Chinese pottery and other shards found in Mayreau have been dated to over 300 years old (Heyman et al, 1988).

### 5.4 Socio-economic resources

The population in the Southern Grenadines (Union Island, Mayreau, Canouan, Palm Island and Petit Martinique) has increased from 2,505 in 1980 to 3,226 in 2001. In 2001, the population of the Southern Grenadines represented approximately 3% of the total population of the island state of St. Vincent and the Grenadines (Ecoengineering, 2007). The population of Mayreau in 2001 was 254 persons, an increase of 72 over the 1991 figure. The number of households in the Southern Grenadines has similarly increased over the past three census periods.

Employment in the Southern Grenadines was 86.9% in 2001, up from 80.6% on the 1990 census (Ecoengineering, 2007). Unemployment in St. Vincent is generally high (21.1% in 2001 up from 19.8 in 1991), and above the levels of the Southern Grenadines. The majority of employed persons work in the tourism sector as cooks or waiters. However, a significant number (26.3%) are reported as fishermen (Ecoengineering, 2007).

## 6. Past and present uses of the area

Although the islands of the Tobago Cays are uninhabited, they are surrounded by the larger populated islands of the Southern Grenadines (Figure 1). According to the 2001 census (as quoted by Espeut, 2006), the Southern Grenadines are home to around 3,200 people. Most of

these live in Union Island (1,776) and Canouan (1,126), with lesser numbers in Mayreau (245), Palm Island (53) and Petit St Vincent (26). For these islands, with an unemployment rate of about 20 percent (Charlier, 2004), the success of the TCMP in bringing tourists and sustaining local livelihoods is critically important. The generally positive attitudes of different local stakeholder groups towards the park is described in a recent interview survey by Ecoengineering (2007). In response to a question of whether or not the reef should become a Protected Area, ninety-eight percent of the respondents said that it should.

## **6.1 Tourism and recreation**

Tourism is the primary source of income in the Southern Grenadines. In 2003, tourism contributed 15% of the country's gross domestic product (GDP) and its overall benefit to the economy was US\$82.4 million (IJA, 2004a). In 2003, more yacht passengers, cruise ship passengers and day visitors were recorded for the Grenadines than for the island of St Vincent (IJA 2004d). The Tobago Cays are the focal point for marine tourism in the Southern Grenadines.

The current numbers of visitors to the Cays is not accurately known. Heyman et al (1988) estimated that 33-37,000 tourists visited the Cays in 1986 and spent 44-48,000 visitor days in the park. Charlier (2004) quoted a '1995 French survey' suggesting that some 14,000 yacht people, 25,000 charter-boat day trippers and 10,000 cruise-ship passengers visit the Cays each year. By 2002, total visitor numbers to St Vincent and the Grenadines were reported by Homer and Shim (2004) as 247,458, with 77,631 arriving by air, 70,314 by cruise ship, and 86,451 on yachts. Many of these people visit the Cays but the actual numbers are not recorded.

### **6.1.1 Yachting**

The Tobago Cays are particularly popular as a yachting destination. Bareboat charters, crewed charters and private yachts all appreciate the quiet and safe waters of the Tobago Cays lagoon for anchoring. In the mid-1980s, Heyman et al (1988) reported that around 28 yachts would be found anchored in the lagoon during an average day during the high season (November to March). The '1995 French survey' quoted by Charlier (2004) estimated that 3,000 yachts anchor in the lagoon each year. Some reports (e.g. MEDO, 2003) suggest that over 100 boats may be found in the Cays on some days in the high season.

A typical 10 day yacht charter, beginning and ending in St. Vincent, will include two nights in the Tobago Cays area and only one at each other destination (Heyman et al, 1988). Some private yachts travelling up and down the Eastern Caribbean are known to anchor for a week or two at a time in the Cays.

Despite the obvious attractions of the Grenadines as a yachting destination, a recent yachting study (UNECLAC, 2002, as quoted in Franklin and Mahon, 2003) reported that "*St Vincent and the Grenadines is not considered a yachting-friendly country*". All day long sailors are approached to buy all kinds of items: bread, fruits, vegetables, souvenirs and lobsters. Although the vendors are rarely violent, the constant solicitation is irritating to the visitors (1995 yachting survey, as quoted in MEDO, 2003). Robbery is not a major issue in Tobago Cays since the sailors rarely leave their yachts for any extended period of time, but dinghies are sometimes stolen overnight.



**Figure 4. Yachts anchored in the Tobago Cays 'lagoon', including over the sea grass bed south of Baradal. Note the larger cruise liner yacht at anchor behind Petit Rameau. Photograph taken August 1992.**

### **6.1.2 Diving and snorkelling**

The clear and shallow waters of the TCMP make the area very attractive for snorkelling and scuba diving. Approximately 5% of visitors to the Cays are reported as taking scuba dives (FOTC, 2005). The most popular dive locations are Mayreau Garden which offers an exceptional diversity of marine life and the wreck of the HMS Puruni on the west side of Mayreau, with its abundant and friendly fish population.

Snorkelling is common inside the lagoon along Horseshoe Reef and around the four Cays. These sites have low fish abundance and degraded coral reefs (Section 5.2.3) but remain popular for snorkelling due to their close vicinity to the lagoon anchorage. Mayreau Gardens, Petit Tabac, World's End Reef and Egg Reef are less visited by snorkellers, because they are far from the anchoring zone and often have rougher water and currents.

Although divers are usually well educated on the fragility of coral reefs, many snorkellers have little previous experience in this environment and are unaware of the dangers they may cause. Snorkellers are commonly reported as standing on corals, collecting conchs or corals and dropping their dinghy anchors right on to the reefs.

### **6.1.3 Beach tourism**

Plenty of tourists also visit the Cays just to sit on the beautiful beaches and enjoy the scenery. Some visitors fly in for the day from resorts in St. Lucia, Barbados and Martinique. Others arrive on cruise liners. Given the remote nature of the Cays, local transport for these tourists is usually provided by local commercial tour operators, as covered in Section 6.2.4. Some local hotels also organize day trips to the Cays for their residents and thus contribute to the visitation levels and impacts (see Section 5.2.3.1 in Ecoengineering, 2007).

Four of the park's beaches are intensively used. Day charter boats often anchor in front of Jamesby (Figure 3) and drop tourists off on the beach. Some garbage can be found in the vegetation behind the beach. Baradal is popular with independent yachtsmen. The north beach on Petit Bateau is used by the beach vendors with their stalls and barbeques, but is sometimes

spoilt by left-over cans, broken bottles and other garbage. The long east beach of Petit Bateau provides a less crowded option.

Petit Tabac is a particularly attractive island with its long sandy beach on the north side, but is less used than the others due to its position outside the Horseshoe reef.

## **6.2 Commercial uses**

### **6.2.1 Fishing**

Fishing was reported by Heyman et al in 1988 to be the most widespread economic activity among Grenadian males. Approximately 200 fishermen were then reported to live on Union Island (140 based in Clifton and 60 in Ashton) with a further 60 in Canouan. Fishing in those days focused on lobster, conch, shellfish and reef fish, with very little exploitation of the more offshore pelagic stocks. The techniques used included fish pots, nets, and some spear fishing. Another 30 fishermen, mostly from Bequia, were reported to camp on Petit Tabac, fishing principally for lobster and conch using scuba. This practice has now been stopped and a new fishing complex provided for such visitors and locals on Canouan.

With limited local demand, Heyman et al (1988) reported that much of the local catches were exported to Martinique. Between 1974 and 1980, exports of fish from Union Island to Martinique rose from 83 to 180 t per year. By 1987, however, the total annual catch had dropped to 25 t and such exports were no longer economically feasible. Heyman et al further reported the virtual absence of conch in the Cays by 1987, which previously had been collected in abundance by snorkelling.

Nowadays, although fishing in the TCMP has been illegal since the establishment of the Conservation Area in 1987, the area is still fished with gill nets and seine nets, hand lines and trolling, and by diving. Fishers operate in the park from both the northern and southern Grenadines. Espeut (2006) reports Fisheries Division statistics listing 194 fishing boats registered in the Vincentian Grenadines, including 35 in Union Island, 11 in Mayreau and 22 in Canouan. Some of these are believed to operate as water taxis, rather than fishing, but register to take advantage of the duty free fuel concessions available to fishers. Compared to Heyman et al's 200 fishermen in 1987, only 28 fishermen are now registered as living in Union Island. Espeut (2006) also gives Fisheries Division statistics showing that Union Island catches dropped from 102 t in 1995 to just 23 t in 2005.

While recognizing the depletion of the inshore resources, many fishermen have been reluctant to travel further out to sea due to the small size of the local fishing pirogues, and their preference not to be out at sea overnight.

With enforcement of the no-fishing rules, the TCMP may contribute to the recovery of fish stocks and fishing opportunities in the waters surrounding the park. Some consideration will be needed as to where and how local fishers may benefit from any such recovery (see Section 14.5).

### ***Creation of fisherfolk organisations***

Capacity is now being built for the formation of local fishers groups in the Grenadines. CERMES (2006) reported on the fisherfolk planning workshop held at the Robert Divonne Marine Centre, Mayreau, on 15-16 February 2006, where fishers proposed to form organized



representative associations and to provide training to improve fish processing and marketing facilities, safety and fishery management. After some discussion, it was agreed to proceed with project activities in two areas: (1) the formation of a fishers group with up to three chapters (Northern and Southern Grenadines and Carriacou/Petit Martinique) and (2) the design of a series of local training modules for fishers. A steering committee was formed with representatives from each island to take the proposals forward.

### 6.2.2 Yachting

Both local and foreign companies provide yacht chartering services for use in the Grenadines. Three major charter companies offer bareboat and crewed yacht charters out of harbours in St Vincent; two smaller companies are based in Bequia. The combined national charter fleet comprised about 85 vessels in 2002, 12 of these being catamarans (UNECLAC, 2002, in Franklin and Mahon, 2003). The current national charter fleet is estimated as being over 100 yachts (Mary Barnard, Barefoot Yacht Charters, *personal communication*).

Yacht charter companies operating in the Grenadines but based outside SVG include Moorings (St Lucia); Horizon Yacht Charters (Grenada) and Switch and Sparkling (Martinique).

### 6.2.3 Diving

Scuba diving in the Tobago Cays is provided by local dive shops who run an estimated 3,000 dives each year. The dive shops in Union Island (Grenadines Dive) and Canouan (Canouan Dive Centre) run most of the trips to the park. Five other SVG dive shops based in Bequia, Mustique and St Vincent may occasionally operate in the park (Bequia Dive Adventures; Dive Bequia; Dive St. Vincent; Indigo Dive – St. Vincent; and Mustique Watersports).

In addition to the local, land-based companies, some divers also visit the TCMP on 'live-aboard' dive boats based outside SVG (see e.g. [www.peterhughes.com](http://www.peterhughes.com)).

Some local dive operators have argued that these contribute little to the local economy and that only locally registered dive shops (i.e. businesses incorporated and paying taxes in SVG) should be allowed to operate in the TCMP. Others suggest that live-aboard dive operators should be allowed to operate within St. Vincent and the Grenadines if properly licenced and managed. Peter Hughes operation was, for example, reported by St Vincent's Indigo Dive shop, as taking special care with regards to environmental issues, and being in full compliance with international standards on waste management etc.

### 6.2.4 Cruise liners and day tours to the Cays

The Tobago Cays are included in many of the cruise liner trips that cover the eastern Caribbean during the high season, November to April each year. A total of at least 74 cruise liners is scheduled to visit the Cays in the 2006-07 season, with 16 visits per month in the peak months



Figure 5. The Grenadines Dive shop in Clifton, Union Island.

of December and January (see Table 3). The largest cruise liners operated by P&O may have up to 1800 passengers on board. The smaller vessels carry between 80 and 750 passengers.

All of the larger cruise liners anchor in Saline Bay on the west coast of privately owned Mayreau. To land their passengers, the cruise liner companies pay a docking fee to the owner of the island, not the TCMP. Some of the passengers stay on the boat or just take the cruise liner's own free tenders to visit the beach at Saline Bay or to explore Mayreau. Up to five hundred passengers from each liner also visit the Tobago Cays on board day charter boats, water taxis or dive boats (Table 3). These visits to the Cays from the larger cruise liners are all provided by local operators, not the cruise liner tenders. A small fleet of local vessels is thus employed taking passengers to and from the Cays, providing many local jobs.

The main provider of day trips (Wind and Sea Ltd, of Union Island) has four such day trip boats, carrying from 40 to 100 passengers. The larger of these boats (pictured on the right in Figure 6) operate two 3-hour trips each day, one in the morning and one in the afternoon. Water taxis and charter yachts also carry visitors, some for full day trips.

As well as the regular scheduled visits of the cruise liners listed in Table 3, some local companies provide occasional 'excursions' to the Cays for a picnic and swim. These may run from Bequia or St Vincent and can include up to 300 people on a single boat. On both cruise ship days and these excursions, the beaches of the Cays are usually quite overcrowded.

**Table 3. Scheduled visits of cruise ships to the Tobago Cays Marine Park for the 2006-07 season, and estimated numbers of park visitors.**

Company	Ship	Persons on board	Park visitors each trip	Number of visits by ship in							Total visits by ship	Total park visitors (estimate)
				Nov	Dec	Jan	Feb	Mar	Apr	May-Oct		
Pullman Tours	Blue Dream	750	200	5	4	4	4	4	4	27	52	10 400
Club Med	Club Med II	350	50	2	1	2	1	2	2		10	500
	Club Med II <i>to TC</i>	350	350	1	1	1	1	1	1		6	2 100
P&O	Oceana	1 800	500		1	2	1				4	2 000
	Arcadia	1 800	500	1	2	2	2				7	3 500
	Aurora	1 800	500		1						1	500
Cunard	Seabourne Pride	180	60	1	1						2	120
Sea Dream Yacht Club	Sea Dream	80	30		3				2		5	150
Holland America Line	Wind Surf	350	70		1	2	2	1			6	420
Marsans International	Arion	400	200		1	3	1	3			8	1 600
<b>Totals</b>				<b>10</b>	<b>16</b>	<b>16</b>	<b>12</b>	<b>11</b>	<b>9</b>		<b>101</b>	<b>21 290</b>

Notes: All cruise ships anchor at Mayreau except Club Med II, which anchors on some visits in the Tobago Cays as marked '*to TC*'.  
Source: Mr Jean Marc Saily, Wind and Sea Ltd.  
Table not including visits of Windjammer cruise liners.



**Figure 6. Two of the boats currently running day trips to the Cays, including for passengers from cruise liners. Photos: Wind and Sea Ltd web site.**

In addition to running day trips to the Cays, local people obtain some benefit from the cruise liners by selling T-shirts, snacks and souvenirs to the tourists. With some cruises, however, all food and drinks are brought from the ship and passengers are encouraged not to take cash ashore. The medium sized cruise ships which anchor to the west of Petit Rameau also ferry their own passengers to the beaches on the Cays, so offer less local benefits than the larger liners.

#### **6.2.5 Water taxis**

There are currently around 40 water taxis operating out of Union Island, and another 5-10 in Mayreau. Of the 4-5 water taxis in Canouan, only two operate occasionally at present in the Cays. These vessels (Figure 7) only provide actual ‘taxi’ services as a part of their business, for instance in ferrying the vendors to and from the Cays. Since all yachts have their own dinghies, they usually do not need a taxi service. For these customers, the water taxis more often offer to pick up items such as ice, drinks, groceries and vegetables from Union Island. While some clients complain that the prices charged are too high, the taxi operators note the high prices in the Union Island shops and the additional transport costs (fuel) that they need to cover. The water taxis have also in the past taken garbage from the yachts to Union Island for disposal, again for a fee.



**Figure 7. Water taxis hauled out at Clifton, Union Island, and one landing a vendor in the Cays.**

Although Espeut (2006) referred to the “harassment by local people” as an irritation for yacht visitors, this seems to be less of a problem now than in the past. Most water taxi operators usually behave in a responsible manner and provide a good service to tourists. Improvements in this area are partly due to the efforts of the Southern Grenadines Water Taxi Association. Membership of this costs EC\$ 120 each year, which includes \$50 fees, an association T-shirt with logo, and a boat sticker including the operator’s registration number. The ‘Grenadines Water Taxi Project’ has also supported the sector over recent years by providing environmental education, training in customer service and safety at sea, and organisational strengthening (CERMES, 2004; CEC, 2005; 2006). In July and September 2005, the project organised a series of two-day workshops held on Carriacou, Union Island, and Bequia under the theme of ‘Caring for our Coasts and our Future’. Although there are still a few water taxis that are outside the association, many argue that only registered and paid-up members should be allowed to operate in the park.

### 6.2.6 Vendors

Vendors operate in the TCMP selling T-shirts, handicrafts, ice, bread, fresh fish, fruits and vegetables to the visiting yachts. Vendors are restricted to the north beach of Petit Bateau. As most vendors use strings tied between the coconuts trees to display their exhibits (Figure 8), there is some competition for the best pitches. As well as selling from the beach, some speed boats travel around from yacht to yacht selling bread and fruits in the morning, T-shirts and lambis (conch) in the afternoon, and lobster in the evening. Some report that the illegal spear fishing in the lagoon is also sometimes due to these vendors catching fish for direct sale to the tourists.

Visitors can also buy lobsters and have them cooked on the beach. Some vendors have their own BBQ pans and tables and chairs installed on their ‘patch’ (Figure 8).

At some times of the year, especially during the visits of the largest cruise liners, the beach may be almost totally covered by vending sites. This presumably attracts some visitors and puts off others. Some controls on numbers are warranted, both to ensure the aesthetic value of the beaches, and to avoid excessive competition between vendors.



**Figure 8. Vendor sites on Petit Bateau, out of use in the ‘off season’: strings tied between trees for displaying T-shirts for sale (left); BBQ pits and dining tables (right).**

Tourists also need to be careful about buying conch shells, or jewellery that is carved from turtle shells, which may also be found for sale along with the T-shirts. Although it is not illegal to



catch turtles and conch in SVG (outside the park), or for the locals to make bracelets etc. from the shells, it is illegal for persons to cross international borders with some products made from turtles or conch under the United Nations Convention on International Trade in Endangered Species (CITES). Tourists from countries that have ratified CITES (and most European countries have) who purchase such products may thus commit a crime when they take them home (Espeut, 2006). A CITES exemption allows up to four conch shells to be purchased and exported by each person as souvenirs, but some CITES member countries may have stricter domestic import measures in place. If the TCMP is to be promoted as an ecotourism destination, such vending should be discouraged, and the development of alternative, locally made crafts supported. Many tourists are keen to purchase at least some simple souvenir or memoir from their visit.

### 6.3 Hotels and restaurants

The islands around the park include a number of hotels and restaurants which no doubt benefit from the visitors attracted to the area by the Cays. These include four hotels on Union Island as well as the Palm Island Resort on nearby Palm Island. Both Union Island and Mayreau have a range of restaurants catering to the tourist trade. There are no hotels or restaurants located on the Cays.

## 7. Existing legal, institutional and management framework

### 7.1 National level arrangements

National arrangements for the management of both terrestrial and marine protected areas in SVG are currently under development. Developments in this area are complicated by the fact that overall responsibility for a national system of parks and protected areas falls under the Ministry of Tourism, while responsibility for marine areas falls under the Ministry of Agriculture, Lands and Fisheries, through both the Fisheries Division and the Marine Parks Board. Recent developments in this area are described below.

#### 7.1.1 Arrangements for national parks and the new protected areas ‘systems plan’

The National Parks Act (No. 33 of 2002) provided powers for the establishment of national parks and the creation of a National Parks, Rivers and Beaches Authority (known for short as the National Parks Authority or NPA) responsible for parks and other protected area sites. This government body is now being established with the assistance of the EU-funded, €5.7m, 2007-2009, Tourism Development Project.

Linked to this National Parks Act, 2004 saw the production of a ‘Master Plan’ for SVG’s system of protected areas and heritage sites (Ivor Jackson & Associates (IJA), 2004a). This proposes that management responsibilities should in future be clearly shared between agencies having legal authority for the different categories of protected area sites, as listed in Table 4.

**Table 4. Responsibilities of government agencies for different types of parks and protected areas, as proposed by the new protected areas systems plan (IJA, 2004a).**

Agency	Responsible for:
The new National Parks Authority (NPA)	Natural Landmarks, Cultural Landmarks, National Parks (except the Soufriere National Park) and Heritage Sites
St Vincent National Trust	Historic Sites and Cultural Landmarks vested by Government

Forestry Department	Forestry Reserves, the Soufriere National Park, most of which forms part of the central forests, and Wildlife Reserves
Fisheries Division	Marine Reserves, Marine Conservation Areas
Marine Parks Board (with support of the Fisheries Div.)	Marine Parks

At the current time, it is understood that the NPA and the Marine Parks Board both hold legal authority to manage *marine* parks, without clarification on how such responsibility should be divided. The 2002 National Parks Act thus makes provisions for marine areas, but did not repeal the 1997 Marine Parks Act [Need to check this: 2002 National Parks Act not available at time of writing]. As a possible solution, IJA (2004a) recommended that the Chief Fisheries Officer could be included on the NPA Board and the existing skills of the Fisheries Division staff made available to the NPA to assist with the management of marine areas.

Possible arrangements for the co-management of different types of protected area (i.e. the delegation or sharing of management responsibilities between government and local partners) also need to be clarified. For heritage sites and selected cultural or natural landmarks, the national systems plan (IJA, 2004a) proposes that management responsibilities could be shared with NGOs and community voluntary organizations (CVOs) through co-management agreements, either directly or under regional arrangements. IJA (2004b) proposes that as many sites as possible should be delegated to NGOs or CVOs, either fully or partly, as appropriate, allowing the NPA to concentrate more of its resources on product development and marketing, research and monitoring, training, standards and quality control, and providing oversight to the operations of the NGOs and CVOs. While these arrangements are being considered for some heritage and landmark sites, no such arrangements are proposed in the systems master plan for national parks or marine reserves.

### 7.1.2 Arrangements for marine parks

The legal powers to establish marine parks in SVG were created by the Marine Parks Act (No. 9 of 1997). This created a Marine Parks Board, responsible for regulating the use of marine parks, issuing permits and employing staff etc. The Act also set basic rules for marine parks, including that no fishing would be allowed, no objects removed or damaged, no pollution caused, nor any commercial activities allowed except in designated areas. The schedule to the Act defines the composition of the board, the conditions of appointment of the members and the decision making arrangements (by majority vote at board meetings). The power to make regulations under the Act is assigned to “the Minister responsible for parks” (i.e. the Minister for Agriculture, Lands and Fisheries, in the case of marine parks), not the board.

Parallel to the arrangements being made for national parks, the NPA and the systems plan, and recognising the limitations of the 1997 Marine Parks Act, the Ministry of Agriculture, Lands and Fisheries in 2005 prepared an updated draft Marine Parks Bill. This is now being reviewed by the Government’s legal department.

As with the National Parks Act and the proposed NPA, the 2005 draft Marine Parks Bill proposes that responsibility for marine parks should fall under a new Marine Parks Authority. Although the new NPA is a unit under the Ministry of Tourism, it is understood that cabinet has directed that arrangements for marine parks, including any new Marine Parks Authority, should, at least for the time being, be kept under the Ministry of Agriculture, Lands and Fisheries in order to improve coordination with its fishery management role.

Like the current Marine Parks Board, the proposed Marine Parks Authority would be responsible for the management of marine parks, including the development of regulations and zoning. The draft Bill further suggests that management plans for individual parks should be drawn up by the new Authority, not by the local park managers (see Sections 5 and 20 of the draft Bill).

The draft Bill also proposes, however, that the Authority would be permitted to delegate some of its management responsibilities for individual sites (such as the TCMP), either to a local committee (see Section 8 of the draft Bill) or by signing a management agreement with a local body (see Section 19 and Schedule 4 of the draft Bill). Whether the current 1997 Marine Parks Act is eventually replaced by the draft 2005 Marine Parks Bill, and whether such options for delegation would be retained by any future Marine Parks Authority remains to be seen.

## 7.2 Park level arrangements – the TCMP

Given the above uncertainties in the national arrangements for protected areas, both regarding the implementation of the national system plan by the new NPA and the arrangements for marine areas, any current legal and management arrangements for the TCMP must be considered as interim provisions. Keeping this in mind, this section describes the current status of the TCMP, which has over the years been designated under several different protected area categories.

As described in Section 1.1, the waters around the Tobago Cays and Mayreau were first designated in 1987 by the Fisheries Division as a conservation area, along with nine other such areas, in which spear fishing was thereby prohibited. It has been noted (ECLAC, 2002; IJA, 2004a), however, that the 1986 Fisheries Act only in fact provided for the designation of *marine reserves*, not *conservation areas*.

Some previous management plans (e.g. Dublin, 2005) claim that the Tobago Cays were also declared a marine reserve, under the provisions of the 1986 Fisheries Act. It is now believed that such claims are in error and that no such designation actually exists (see the text of the 1986 Fisheries Act at <http://faolex.fao.org/docs/pdf/stv2112.pdf>).

No fishing of any kind is allowed either in a marine reserve or in a marine park. The Fisheries Division have nevertheless argued that the Cays should be re-designated as a marine reserve as well as a marine park to take advantage of the full powers of the Fisheries Act over such areas. Since the area is now designated as a marine park, however, it is not clear what additional gains this would serve. Furthermore, since the primary objective of the marine reserve designation is the conservation and sustainable use of fish habitats and resources, the marine reserve category does not provide an appropriate management regime for the multiple uses of the area, as needed for the TCMP. In contrast, national parks and marine parks<sup>1</sup> are managed jointly for ecosystem protection and recreation. The Marine Parks Act thus provide the most appropriate regulatory mechanism to manage and sustain the multiple marine uses and the environmental needs of the area.

---

<sup>1</sup> The IUCN definition of a national park, as included in square brackets in the draft 2005 Marine Parks Bill is a “*natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible*”.

Exercising the powers of the 1997 Marine Parks Act, the Tobago Cays were declared a marine park by SRO 1997 No. 40. Unfortunately, this order only named the islands of the Cays as being included in the park, not the surrounding marine areas.

Despite this important omission, specific arrangements and powers relating to the TCMP were set by the Marine Parks (Tobago Cays) Regulations of 1998 (SRO No. 26). These provide for the Marine Parks Board to appoint a park manager, a park warden and other authorized officers; to issue permits and commercial licenses; to designate specific areas of the park for the control of anchoring, mooring, and the protection of flora and fauna; and set the powers of authorized officers, among other things. The schedule to the regulations set the original but controversial park fees, as described in Section 15.

In addition to their designation as a conservation area and a marine park, the Tobago Cays are also listed as a forest reserve and as a wildlife reserve (under the 1992 Forest Resource Conservation Act and the 1987 Wildlife Protection Act respectively; IJA, 2004a). The national systems plan proposes that both these and the illegal conservation area designation, and the marine reserve designation (if it exists) should be removed, with the area in future being managed solely as a marine park.

## 8. Existing threats and implications for management

Despite its various descriptions in tourist magazines as one of the largest remaining pristine coral reef groups in the Windward Islands, there is growing evidence that the ecosystem of the Tobago Cays is being badly affected by non-sustainable use and natural environmental impacts (Charlier, 2004). At the time of writing the first draft of this management plan, no comprehensive threat analysis had been conducted (TNC, 2005). Some of the different threats were, however, implicit in the previous plans and analyses, and from some of the evidence presented in Section 5 and 6.

Since the first draft of the plan, the OPAAL 'baseline studies' (Ecoengineering, 2007) have drawn more attention to this area. Chapter 7 of the 'baseline studies' provides an analysis of the strengths, weaknesses, opportunities and threats (SWOT) of the TCMP (see summary in Table 5). Chapter 8 further identifies the potential impacts of both the establishment of the TCMP and the use of its natural resources by stakeholders on both the natural and socioeconomic environment. Section 9.13 of the 'baseline studies' summarises the potential impacts of the park on a range of physical, biological, social, economic and cultural factors. These analyses conclude that the mitigation measures included in this plan should reduce the threat levels if effectively implemented.

**Table 5. Summary of the SWOT analysis conducted by Ecoengineering (2007).**

<b>Strengths</b>	<b>Weaknesses</b>
World-renowned reef	Management structure
Largely uninhabited	Park patrols
Isolated	Lack of equipment
Buy-in from stakeholders	Ambiguous boundaries
Islands owned by government	Lack of infrastructure
Water taxi system	Diseased coral / damaged coral
	"Familiarity breeds contempt" *
	Language barrier



	Water taxis attitudes
	Fee structure
	Absence of local visitors
<b>Opportunities</b>	<b>Threats</b>
Water taxi / vendor Income	Popularity vis-à-vis carrying capacity
Transportation of solid waste to shore	Wastes from yachts and cruise ships
Monitoring / training of locals	Overexploitation (overfishing / out of season harvesting / spear fishing)
Diving	Disturbance to turtles
Turtle grazing / nesting	Walking on reefs
	Anchor damage to reef

\* Note: The Phrase “Familiarity breeds contempt” conveys the fact that many of the visitors to the Cays have been to the site for many years and have as a result of their familiarity with the site formed bad habits which could be considered a weakness.

### 8.1 Natural threats to resources

Significant sources of natural threats to coral reefs include storm damage and white band disease. A region-wide outbreak of the latter in the 1980s much reduced the abundance of elkhorn coral.

### 8.2 Human threats to natural resources

Key human induced impacts are listed by OPAAL (2006) as:

- over fishing attributed to both local fishermen and visiting yachts (particularly in the use of spear guns, illegal since 1987);
- physical impacts associated with visiting yachts (anchor damage and running aground);
- damage due to snorkelling and diving, both in touching fragile corals, either deliberately or accidentally, and in stirring up sediments; and
- bilge and wastewater discharged from yachts.

The introduction of goats to the islands is also believed to have had a negative influence on the vegetation cover and composition. The goats are reportedly still present on Petit Rameau in small numbers, although occasional culling by the police and the rangers has reduced the population.

In addition to the sewage produced by yachts, solid waste (faeces and garbage) is left on the islands by day trippers. Water pollution from the sun-cream used by bathers has also been reported as a visible problem on days with many visitors.

Ecoengineering (2007) also report that some groups of snorkellers “chase after and disrupt the turtles while they are either attempting to graze or rest” in the sea grass beds off Baradal.

The coral bleaching associated with global warming is also presumed to be a cause of mortality in some reefs. Algal overgrowth of reefs is common (Ecoengineering, 2007; Espeut, 2006).

Lastly, the frequent use of bonfires on the islands, mostly to burn the refuse from picnics and vendors, poses the threat of fire to the natural vegetation cover and wildlife. The bare patch of grass cover on the southern hillside of Petit Bateau (see Figure 3) was reportedly caused by fire although it is not clear whether this was started accidentally. Local ecologist Jacques Daudin reports that the area was burnt deliberately by egg collectors to destroy cactus plants and

improve their access to the bird roosts. The very slow return of the forest cover since the fire, which occurred at least before 1992 confirms the fragile nature of these island resources.

One additional threat to the park raised by Ecoengineering (2007) relates to the influx of many non-english speaking visitors and the difficulty of communication between the visitors and managers of the Park. Park rangers have indicated the difficulties that this presents in collecting fees as well as conveying the rules and restrictions of the MPA to these users.

### **8.2.1 Carrying capacity issues**

One of the most commonly reported problems faced by yachtsmen in the Tobago Cays is the overcrowding of visiting boats. MEDO (2003) report that more than 100 yachts may be found anchored around the Cays during the high tourist season. Previous plans and documents have discussed the concept of the 'carrying capacity' of the park. As noted by ECLAC (2002), carrying capacity is a concept with two dimensions: one social – relating to the enjoyment and satisfaction of the visitor; and the other environmental – relating to the impact of users on the resource. While social capacity can be estimated by visitor surveys, environmental capacity is more difficult to measure (ECLAC, 2002). Impacts such as physical damage by anchoring, diving and snorkeling all depend on the degree of care or awareness shown by users. The impacts of sewage from yachts depend on whether they use holding tanks and on the flushing characteristics of the location. The carrying capacity of the lagoon was reportedly estimated by the International Marine Research facility of Key Largo, Florida as 50 boats (cited by MEDO, 2003, based on the 1994 yachting survey), but the rationale for this estimate is not known.

A second carrying capacity issue relates to the numbers of water taxis and vendors etc plying their trade in the park. T-shirt vendors for example currently vie for access to the few available spaces on the island where they may hang their wares between the palm trees (see Figure 8). With too many such operators, both the experiences of the visitors and the profits of the individual vendors will suffer.

Consideration must be given to the carrying capacity of the Tobago Cays using a number of different approaches (see Part 2). Knowledge of user impacts and attitudes to different levels of use and conditions at the TCMP would help to establish guidelines for future access. If access to the lagoon is to be limited to a certain number of boats under any future management plan, consideration must be given to either a pre-visit booking system, or the provision of alternative anchoring locations for yachts in excess of the capacity.

### **8.3 Potential impacts of the TCMP on local stakeholders**

Section 8.3 of the 'baseline studies' report (Ecoengineering, 2007) summarises the potential impacts of the establishment of the TCMP on the different resource users, including fishermen, yachters / tourists, divers, charter boat operators, water taxi operators, vendors, residents, and hotels / restaurants. Such impacts include the fees to be charged for different uses of the resource; the limitations of access for certain groups, such as unaccompanied divers; and the constraints to be placed on certain activities within the park, such as locations for vending.

In the long term, the goal of both the TCMP and the OPAAL project is to protect natural resources while at the same time allowing those human uses that are not environmentally damaging. In addition to setting the rules and restrictions for the TCMP, this plan includes efforts designed to assist different stakeholder groups to develop their livelihood options while ensuring this goal of sustainability (see Section 16.2).

## Part 2. Management Plan

### 9. Mission of the TCMP

The mission of the TCMP is stated in several of the previous draft plans as 'to protect, conserve and improve the natural resources of the Tobago Cays'. Such a statement makes no reference to the important role of the park in providing social and economic benefits to adjacent communities and requires modification to include these aims (IJA, 2004c).

The 2004 system plan for SVG's protected areas and heritage sites (IJA, 2004a) also proposes that the TCMP should be used, along with the Soufriere National Park, as a flagship site to "*brand, promote and market SVG as the ultimate ecotourism and recreation destination*". With this role, the TCMP clearly has both local and national importance.

Reflecting the above needs, the mission of the TCMP is to contribute to national and local development, through the management of the park's natural resources, based on the principles of sustainable use, cooperation among resource users, active and enlightened local participation, and equitable sharing of benefits and responsibilities among stakeholders.

The mission suggested above was derived from the one adopted for St Lucia's SMMA, and needs verification or revision by TCMP stakeholders, along with the goals and objectives below.

#### **Action**

- TCMP stakeholders to review proposed mission statement, goals and objectives, and revise as agreed.

### 10. Goals and objectives

The goal of this management plan is to protect and enhance the natural resources of the TCMP and allow for their sustainable and equitable use by local people and visiting tourists, by developing and implementing effective participatory management systems.

Objectives for the TCMP have been suggested in a number of previous plans. Two primary objectives were listed by OPAAL (2006), based on the discussions of a local group comprising the board and other stakeholders:

Objective 1: Enhanced conservation and management of biological diversity.  
Objective 2: Sustained economic benefits from the use of existing natural resources.

Reflecting the joint and compatible aims of *sustainability* and *development*, the overall objective of the TCMP is thus to maintain or restore the quality of the park's natural resources and the scenic aspect of the islands and thereby support the economic development of St Vincent and the Grenadines. Other secondary objectives for the park including those of Heyman et al (1998) and ECLAC (2002) are listed throughout this plan at the start of relevant sections.

### ***International environmental obligations***

In addition to reflecting local policies and local communities' priorities, the goals and objectives for the TCMP must take into account SVG's commitments under international conventions on the natural environment and sustainable development.

St Vincent and the Grenadines acceded to the 1992 Convention of Biological Diversity (CBD) in June 1996. Under Article 8(a) of the CBD, SVG is bound to establish a *system* of protected areas ... to conserve biological diversity. Under Article 8(c), parties must "*regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use*".

St Vincent and the Grenadines was also one of the original parties which adopted in 1990, the Protocol on Specially Protected Areas and Wildlife (SPA) for the Caribbean region. The Protocol became international law in 2000. Article 4 of SPAW requires parties to establish protected areas ... in order to conserve, maintain and restore:

- representative types of coastal and marine ecosystems of adequate size to ensure their long-term viability and to maintain biological and genetic diversity;
- habitats and their associated ecosystems critical to the survival and recovery of endangered, threatened or endemic species of flora or fauna;
- the productivity of ecosystems and natural resources that provide economic or social benefits and upon which the welfare of local inhabitants is dependent; and
- areas of special biological, ecological, educational, scientific, historic, cultural, recreational, archaeological, aesthetic, or economic value, including in particular, areas whose ecological and biological processes are essential to the functioning of the Wider Caribbean ecosystems.

The TCMP is one of 47 sites proposed for inclusion in SVG's national systems plan for protected areas and heritage sites (IJA, 2004a), that is intended to deliver the above aims. The specific objectives of the TCMP are listed in the systems plan as:

- habitat / wildlife protection
- biodiversity conservation
- soil and water conservation
- research
- educational awareness and appreciation
- traditional uses
- recreation and heritage tourism
- visual and aesthetic values

## **11. Institutional arrangements**

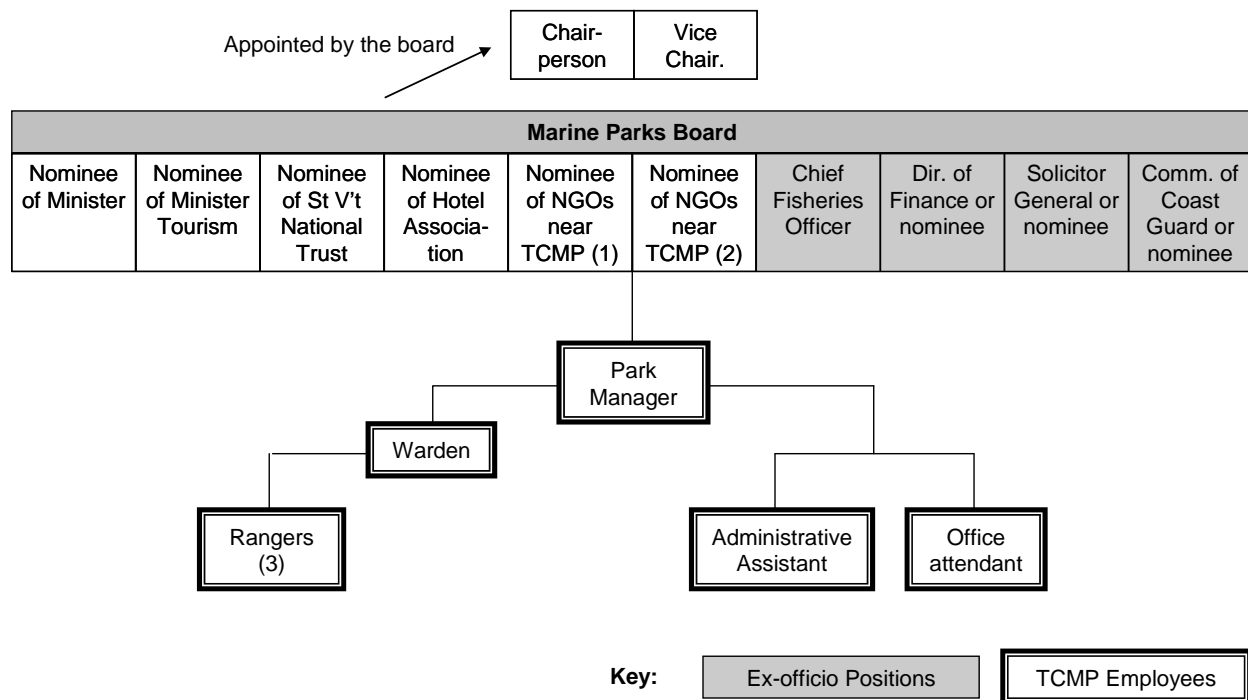
As described in Section 1.1, the management arrangements for the TCMP have developed gradually over the years, in the face of a series of hurdles and delays. At present, the park is run from Union Island by a manager and a small team of employees. The team is directly guided in its actions by the Marine Parks Board, as illustrated in Figure 9.

Although the Marine Parks Board is presumably intended to enable local users to have some input to the management of the park, there are many complaints that the current arrangement

works in a very top-down fashion, taking only limited account of the views of local people. Although the two NGO representatives are supposed to be nominated by the NGO sector, it is understood that they have usually been appointed by cabinet with little, if any, local consultation. Although the Board is supposed to appoint its own chairman and vice-chairman, such appointments again seem to be directed by cabinet.

Following the 2003 conflicts over the Palm Island and MEDO proposals, government has thus taken the lead in management at the expense of local participation. Although clearly concerned about the current situation, many local stakeholders are now taking a back seat until a new system is put in place that provides for more transparent and participatory decision making.

Changes are now needed to more effectively involve locally experienced resource users in decision making and at the same time to allow the Marine Parks Board to perform its oversight functions rather than being responsible for directing day to day operations.



**Figure 9. The current organisational arrangement for the TCMP.**

The benefits of developing a more localised and participatory management partnership would be expected to include:

- management decisions that harness the knowledge and skills of local people;
- improved enforcement, when resource users agree with the rules put into place;
- the sharing of management costs, reducing the financial burden on the park;
- increased awareness and understanding of resource users on the positions of the different partners, reducing conflicts and disputes.

While there are clear benefits to be derived from a collaborative management approach, it will require careful facilitation, a good understanding of the needs and motivation of different stakeholders and strong political support for success. A strong, two-way communication strategy will also be needed to ensure that the park benefits are equitably shared, and perceived as such. The following sub-sections give details of the changes needed at both national and local (TCMP) levels.

### **11.1 National level management – the Marine Parks Board / Authority**

As described in Section 7, a national Marine Parks Board was established by the Marine Parks Act (No. 9 of 1997). The Act requires that the Board comprises ten members to be appointed by the Minister in writing, four in an ex-officio capacity, as listed in Box 1 and shown in Figure 9.

#### **Box 1. The ten members of the Marine Parks Board, as required by the 1997 Marine Parks Act.**

- the Chief Fisheries Officer or his nominee (ex-officio);
- the Director of Finance or his nominee (ex-officio);
- the Solicitor General or his nominee (ex-officio);
- the Commander of the Coast Guard or his nominee (ex-officio);
- a person nominated by the Minister (responsible for parks);
- a person nominated by the Minister of Tourism;
- a person nominated by the St Vincent National Trust;
- a person nominated by the Hotel Association; and
- two persons nominated by Non-Governmental Organisations functional in the district where the park is declared.

Assuming that the persons nominated by the two Ministers are seen as government representatives, the balance of power on the board is 6 : 4 in favour of the government. Both FMC (1995) and ECLAC (2002) recommended a board with a stronger representation of the private sector. ECLAC proposed a board composition with six government members, three representatives of environmental NGOs and three representatives of the marine tourism industry. FMC (1995) recommended 4 government and 6 non-government members. Cordice (2000) proposed a board with 6 government and 6 non-government members. The 2005 draft Marine Parks Bill (schedule 2), however, proposes 10 government to 4 non-government members. Such a shift could improve the national oversight of the new Marine Parks Authority, but would need to be accompanied by a separate local arrangement for each marine park, if improvements are to be achieved in local participation. Such local arrangements are allowed for under the draft Bill and proposed in the following section,.

As defined in the 1997 Marine Parks Act (currently in force), the functions of the Board are to:

- issue permits;
- preserve and enhance the natural beauty of the marine parks;
- promote scientific study and research in marine parks; and
- regulate the use of parks and to be responsible for zoning within the parks.

Under 1998 SRO No. 26, the Board is also required to appoint a park manager, a warden, and marine park 'officers' as needed to fulfil the purpose of the regulations. The power to make regulations under the 1997 Act is, however, assigned to the Minister responsible for parks, not the current board.

The 2005 draft Marine Parks Bill would, if enacted, give an extended list of functions to a new Marine Parks Authority, to:

- advise the Minister on the establishment of marine parks;
- with the prior approval of the Minister, make, determine and implement policies, programmes, management plans and strategies for the conservation, enhancement protection and sustainable management of marine parks;
- preserve and enhance the natural beauty of marine parks;
- undertake scientific research and studies in relation to marine parks and to encourage and promote research in the marine parks;
- regulate the use of marine parks and to be responsible for zoning within marine parks;
- inform the Minister, Ministries and Governmental Departments on matters relating to and affecting marine parks;
- perform such other functions as may be authorised under any other written law; and
- generally to carry out, implement and administer this Act, together with such other functions as may be conferred upon the Authority by the Minister for the purposes of this Act.

Under Section 15 of the draft Bill, the Authority would also be required to assess the status of the marine resources of each park on a three-yearly basis, holding discussions with the public and advising the Minister accordingly.

Under Section 5.(2), the Authority may delegate any of the above functions to “any of its management committees, members, officers or agents”. Such delegation options would be required to develop an optimal partnership arrangement for the TCMP, as described in the following section.

Section 6 of the draft Bill further proposes that an Advisory Council be established to advise the Minister on issues relating to marine parks, including both policy and practical matters. The Advisory Council would collaborate with the Authority in the preparation of management plans.

### ***Actions***

- The uncertainties over the responsibilities of the National Parks Authority, the Marine Parks Board and any future Marine Parks Authority should be resolved as soon as possible and integrated under the new national protected areas systems plan.

## **11.2 Park level management – the TCMP**

As noted earlier, the 2005 draft Marine Parks Bill proposes that the new Marine Parks Authority would provide oversight to marine parks at a national level, while the management of each marine park site (such as the TCMP) is directed by some local level arrangement. If this Bill is enacted, the Marine Parks Authority would be permitted to delegate some of its management responsibilities for individual sites, either to a local committee (see Section 8 of the draft Bill) or by signing a management agreement with a defined local body (see Section 19 and Schedule 4 of the draft Bill).

The functions of any such local park management committee would be agreed with the Board as defined under Section 8 of the draft Bill. While some flexibility is allowed by Section 8.(3), the draft Bill suggests under Section 8.(4) that the local committee would:

- enforce decisions taken by the Authority;
- prepare and submit an annual report on the state of the marine park to the Authority;
- ensure the efficient implementation of the work programme and policy decisions of the Authority;
- manage all finances of the marine park consistent with the policies of the Authority;
- work with other relevant agencies using the media to promote the marine park as a tourist resort and attraction;
- ensure the marine park is managed along commercial lines;
- ensure the ecology of the marine park is sustained;
- design and develop on a monthly basis information for the education of all users of the marine park;
- regulate the use of the park by collecting fees.

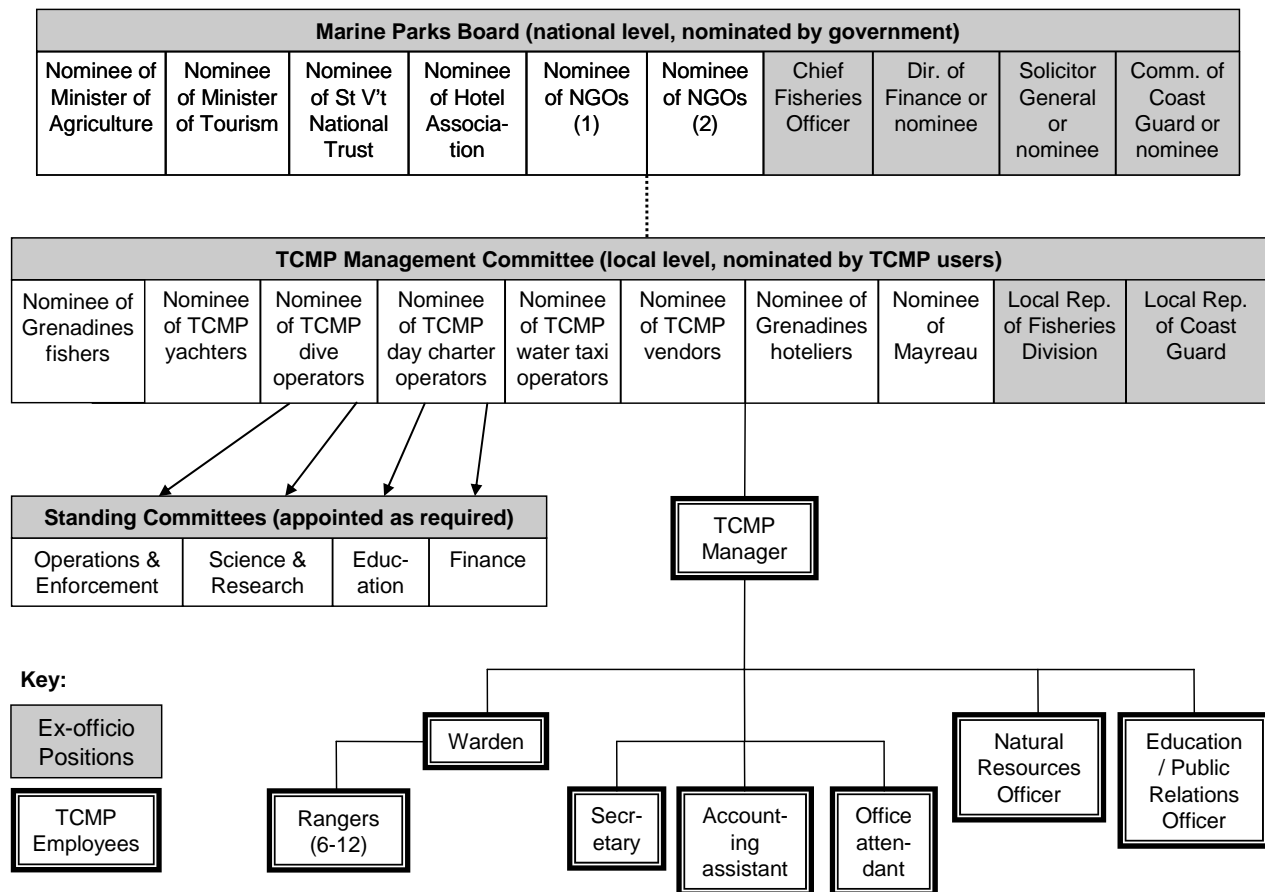
This list of functions still leaves all effective decision making power in the hands of the Authority. If the full benefits of co-management are to be achieved, it is suggested that some degree of decision-making power should be delegated to the local committee. Within certain boundaries, for example, local stakeholders should be involved in the development and review of this management plan and in thereby deciding the management regulations and zones for the park, etc. The committee should also be involved in the recruitment of employed park staff and the resolution of conflicts between park users.

Following the experiences of the last few years (Section 1.1), it is now agreed by most stakeholders that the entity charged with managing the TCMP should include representatives of both government offices and of different local user groups.

A range of possible organisational structures was discussed at the 2007 consultations. Based on stakeholders' wishes to adopt a reasonably simple structure while also ensuring balanced representation of different user groups, the organogram shown in Figure 10 was adopted as the preferred option. In this structure, a local TCMP Management Committee would be formed (either under the provisions of the 2005 draft Marine Parks Bill, when enacted, or as a directive of the existing Marine Parks Board) to sit in between the national Marine Parks Board/Authority and the employed park staff. The proposed composition of the committee is suggested in the figure, with each local user group having its own representative. The local representatives of the Fisheries Division and the Coast Guard would also sit on the Committee as ex-officio members. A chairperson would be elected by the committee members each year, and the TCMP Manager (supported by his/her staff) would operate as secretary.

Under this option, the representatives of the different user groups would be nominated each year by their members. How this is achieved may be defined (e.g. in the articles of association of the committee), or left up to each user group. If a user group already has an association which is well recognised as representing its members' interests (e.g. the S. Grenadines Water Taxi Association), this association could be appointed as their representative, either informally or formally. If other sectors do not have such an umbrella group, they could appoint an individual to represent their interests by some other means.





**Figure 10. Proposed organisational structure for the TCMP.**

Notes: The composition of the national level Marine Parks Board is based on the current Marine Parks Act: a longer list is proposed in the draft 2005 Marine Parks Bill. Park staff positions, as illustrated here, are covered in Section 20.1. The TCMP Manager would be the secretary to the TCMP Management Committee. Chairpersons would be elected for each committee by their members.

The TCMP Management Committee would guide the TCMP staff on the local needs of users and the best ways of managing their activities within the park. Where necessary or useful in particular years, standing committees may also be formed to provide special guidance in certain functional areas, such as suggested below and in Figure 10:

- operations and enforcement;
- science and research;
- education; and
- finance.

Such standing committees would assist the park staff in ensuring that progress is made each year towards the TCMP goals and objectives. Each functional committee would plan activities within its scope of operation for approval by the general body of the Management Committee.

The term of office of each of the committee positions would be one year. At the end of each term, committee members would be eligible to be re-elected, but no individual should hold the same position on the committee for more than three consecutive years.

The TCMP Management Committee should meet on an approximately quarterly schedule, e.g. as proposed by Cordice (2000):

1. Year opening / Mid season review (January)
2. Season ending (May)
3. Yearly pre-season planning session (full day meeting) (September)
4. Approvals/final draft for following year's plan (November)

Additional meetings could be called at the discretion of the chairperson. The standing committees could meet every month, or as required to ensure successful delivery of the tasks assigned to them. As far as possible, meetings should be scheduled at times that are convenient to stakeholders' timetables and other commitments,

### ***Representations of different user groups***

An important factor in considering the organisational structure for the TCMP is the large number of potential co-management partners in the Grenadines. The Sustainable Grenadines project has been particularly active in developing the capacity of local groups (see Annual Report, Workplan and Overview by the Project Implementation Unit (PIU), 2005a, 2005b and 2006). The enthusiasm of local stakeholders to be involved in local development is clearly expressed in the project's vision statement (PIU, 2006).

Mahon et al (2002) listed 39 NGOs operational in the Grenadines, 26 of these in SVG. Such NGOs are keen to be involved in the sustainable development of local resources as evidenced by the long lists of proposals put forward in stakeholder consultations such as held by CCA CaMMP (2002) and Espeut (2006, Section 7.5). Some of the 2002 proposals have since come to fruition with the support of the Sustainable Grenadines project.

With so many active stakeholder groups, and at a time when civil society involvement in local development issues is becoming increasingly necessary, it will be important that the committee structure proposed in Figure 10 does not exclude any important stakeholders. Care will be needed that the nominees for each committee position each year represent their constituencies without bias or favouritism. If certain user groups can not easily achieve consensus on their nominations each year, then a process and structure for the democratic election of committee members should be considered.

### ***Actions***

- The designation of the Tobago Cays as a fisheries 'conservation area' is unnecessary inside a marine park and should be removed to avoid any overlap in responsibilities between the Fisheries Division and the Marine Parks Board/Authority. The area should in future be managed solely as a marine park under the authority of the Marine Parks Act (as and when updated by the new 2005 Marine Parks Bill).
- The organisational structure of the TCMP, particularly the means of improving local guidance for the management of the park, should be agreed by local stakeholders and the current National Parks Board, e.g. based on the structure proposed above, and then implemented as agreed. This action should be undertaken as a matter of priority so that

the new TCMP Management Committee can both lead and assist with the implementation of this plan.

## 12. Boundaries

The boundaries of the TCMP were agreed by the Marine Parks Board on 6 April 2006, and subsequently approved by cabinet on 1 November 2006, as defined by the following lines of latitude and longitude:

N boundary: 12° 40' N  
S boundary: 12° 36' 30" N  
E boundary: 61° 19' W  
W boundary: 61° 24' 30" W

As shown in Figure 11, the new TCMP boundary fully encloses the slightly smaller area declared as a 'Conservation Area' by the Fisheries Department in 1987. Use of a spear gun was prohibited in these areas under Order 1987 No. 1, Section 21.(4).

Lying at latitudes just north of 12° 39' 30", Catholic island and Jondall island, which were outside the 1987 conservation area, are now included within the park boundary. Under the proposed zonation plan, however, fishing is still allowed in these areas to the west of Mayreau, as requested by Mayreau's fishers.

The newly adopted boundary encloses most of the shelf surrounding the islands down to the 20m depth contour. It excludes, however, the waters over Catholic Rocks and Pelican Cay, lying just to the south-west of Catholic Island, and thus slightly to the west of the new western boundary. These waters were *inside* the boundary recommended by the Marine Parks Board on 5 December 2002, which proposed a western boundary of 61° 25', with other coordinates as above.

### **Actions**

- Following the approval of cabinet, the new boundary should be gazetted. In the process, the Marine Parks (Tobago Cays ) Declaration Order (SRO No. 40 of 1997), which defined the original Tobago Cays Marine Park as just the four main islands of the Cays, should be repealed.

## 13. Zonation

The objectives of zoning the TCMP are as given below (ECLAC, 2002).

- To ensure sustainability of both consumptive and non-consumptive uses of the resources.
- To allow for the regeneration of degraded benthic communities and/or over-exploited populations of fish and other marine vertebrates and invertebrates.
- To provide protection to species of special concern (e.g. vulnerable, threatened, endangered, migratory species or over-exploited species of high commercial value).
- To protect the habitats which are critical to the survival of species of special concern (e.g. breeding, nesting, nursery, feeding and roosting grounds).
- To eliminate or minimize incompatible uses and conflicts between resource users.

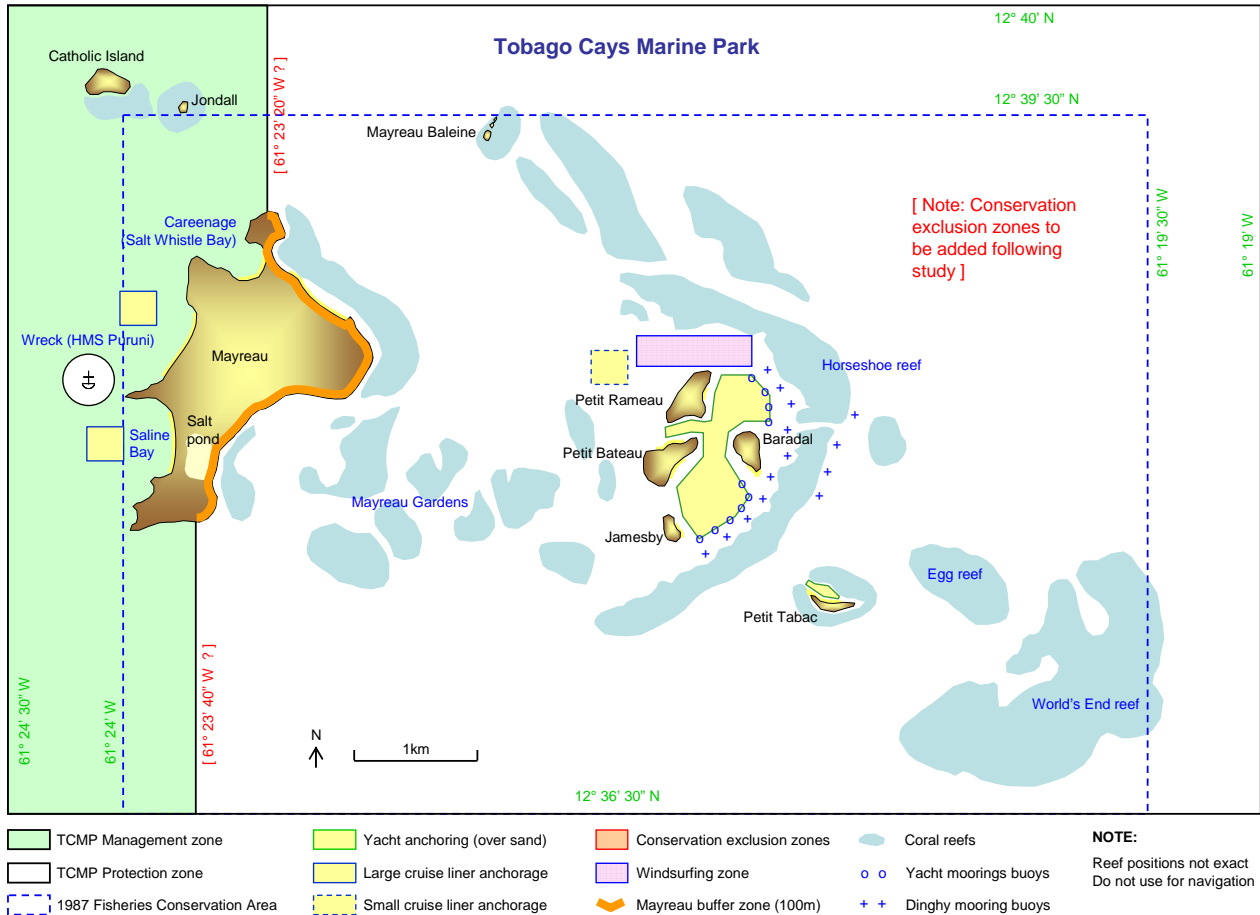
Zonation plans are commonly used where protected areas are required to deliver multiple objectives. Zone plans separate conflicting human uses; allow specified uses in certain areas; and provide protection in other areas as needed to sustain resources. Zones are commonly demarcated with buoys, signs or other markers and should be clearly displayed on maps of the park. A zone plan should, however, be as simple as possible and should provide the minimum restrictions on human uses compatible with the needs of users and the sustainability of the resource (Kelleher, 1999).

In the case of the TCMP, Several people have argued that there is little need for a complicated zonation plan for the park as there is little conflict between users that needs to be managed. The main needs are to protect marine resources from careless anchoring in the first instance, and also to give protection to any particularly valuable or threatened habitats or species that exist in the park. Detailed study of the spatial distribution of natural resources will be required to identify such areas and to designate 'conservation exclusion zones' as proposed in section 13.1.6 below.

The existing legislation does not yet define any zonation for the TCMP. A variety of zones and systems have, however, been proposed in the previous plans and documents. Although none of these has yet been formally adopted, three main zones were informally discussed and reportedly approved by cabinet in 2004, as below:

- a 'protection zone' including the cays and the waters around them to the east of Mayreau, and also the waters around the wreck of the HMS Puruni;
- a 100m wide 'buffer zone' – a strip of land along the eastern coast of Mayreau, within which no development would be permitted; and
- a 'management zone' including the remainder of Mayreau island, and the waters to the west of Mayreau.

The following sections describe a simple zonation plan based on these three zones, in addition to three other smaller zones to be identified within the main protection and management zones. The objectives and regulations associated with each of these zones are described below, based on the content of the previous proposals and from discussions with current park stakeholders. In reading the zone regulations, users should consider also the wider rules and regulations outlined for the park in the following Section 14. The zonation plan is illustrated in Figure 11 below. The proposed zones have been agreed in principle with users at the OPAAL consultations: the exact positions of each of the zones now need to be confirmed. Such positioning will best be finalized on the ground by a team of park staff and representatives of park users.



**Figure 11. Draft zone map for the TCMP.**

Note: The Mayreau and Tobago Cays ‘conservation area’ established by the Fisheries Regulations 1987 (SRO 1987 No 1) is currently included in this figure to aid discussions. Given the intention to drop this designation for the Tobago Cays, as stated in the national Protected Areas Systems Plan (IJA, 2004a), the conservation area boundary may be removed from the map in due course. It is not considered as one of the key zones in the following zonation plan.

## 13.1 Zone objectives and regulations

### 13.1.1 Protection zone

**Objective:** to provide protection from extractive uses such as fishing while allowing entry and recreational use (excluding fishing) to the waters and islands of the Cays, on payment of the park entry fee.

The protection zone includes all of the park waters and islands to the east of the Mayreau coastline, and more specifically to the east of the line of longitude  $61^{\circ} 23' 20''$  W drawn northwards from northernmost headland of Mayreau, and east of the line of longitude  $61^{\circ} 23' 55''$  W drawn southwards from Monkey Point, the southernmost headland of Mayreau (see Figure 11, exact longitudes to be confirmed). The protection zone also includes a separate area off the west coast of Mayreau: a circle of 200m in diameter around the wreck site of the HMS Puruni.

In these zones, the no fishing status of the park will be strictly enforced to restore fish populations and preserve the nursery function of the shallow waters around the Cays. The provisions for anchoring and mooring within this zone are described in section 13.1.4 below.

The boundary of the eastern part of the zone would be marked by shore based signs at the relevant longitudes on the north and south headlands of Mayreau. The protection zone around the wreck of the HMS Puruni should be marked with 8 demarcation buoys.

The specific regulations that apply in the protection zone are as listed below.

• No entry except on payment of the required entry fees.
• No anchoring by cruise liners except those carrying less than 400 passengers and in the designated anchorage zone to the west of Petit Rameau.
• No anchoring by yachts or motor cruisers except in the two designated anchoring zones in the Tobago Cays 'lagoons'.
• No barbeques except on the beaches of Petit Bateau, with prior permission of TCMP, and on payment of the agreed fees.
• No shore-based commercial activities (including vending and barbeques) except on Petit Bateau.
• No fishing of any type.
• No windsurfing except in the windsurfing zone to the north of Petit Rameau and inside Horseshoe reef.
• No permanent or semi permanent facilities to be erected on any of the islands in the zone.
• No overnight camping on any of the islands within this zone.

### 13.1.2 Buffer zone

Objective: To maintain the natural appearance of the coastline of Mayreau on the eastern side of the island facing the Tobago Cays.

The 'buffer zone' is a 100m strip of land on the landward side of the high water line along the east coast of Mayreau, and more specifically to the east of the lines of longitude separating the protection zone and the management zone, as defined above.

One regulation would apply to the buffer zone, as given below.

• Within the buffer zone, no construction shall be allowed of any houses, beach facilities or other permanent or temporary structures.
--

### 13.1.3 Management zone

Objective: To provide for relatively unrestricted activities of the residents of Mayreau and visitors to that island, while providing the option to apply local restrictions in future as needed.

This remaining part of the park is zoned for 'general use'. This includes anchoring to the west of Mayreau, diving, snorkeling and fishing within the restrictions of the fisheries regulations. No additional specification to the Fisheries Regulations of 1987 is necessary provided there is a strict enforcement.

The 'management zone' includes all of the lands of Mayreau that are not included in the buffer zone, and all of the park waters to the west of Mayreau and west of the lines of longitude marking the western edge of the protection zone, except for the separate small protection zone around the HMS Puruni wreck site. Only one specific regulation is proposed for the management zone at this time, as given below.

- No anchoring of cruise liners except at the designated anchorage zones in Saline Bay and Twassante Bay.

#### **13.1.4 Anchoring zones and mooring buoys**

**Objective:** To provide safe and secure options for anchoring and mooring of different sizes of vessels while protecting the park's marine resources from anchor damage.

Given the various different types and sizes of vessels that use the park, anchoring and mooring shall be controlled by a number of different zones and rules as outlined below.

Within the protection zone, two anchoring zones may be used by yachts (and motor cruisers) up to 100 feet (30.5m) in length:

1. over the sandy substrate inside the 'lagoon' enclosed by the islands of Petit Rameau, Petit Bateau, Jamesby and the Horseshoe reef (see Figure 11); and
2. over the sandy substrate inside the 'lagoon' north of Petit Tabac.

One anchoring zone is assigned for use by small cruise liners (e.g. Club Med and Windjammer) carrying up to 400 passengers, to the west of Petit Rameau within the protection zone.

Two anchoring zones are assigned for use by large cruise liners, to the west of Saline Bay and Twassante Bay in the management zone. Two alternative zones were proposed here to allow the cruise liners to choose the site offering the best shelter from the weather, wind and swell on each given day.

The main anchoring zone among the four Cays shall be bounded on the east side by a series of large white mooring buoys. No anchoring will be permitted on the eastern side of these buoys to prevent damage to the adjacent Horseshoe reef. The line of buoys should be positioned to prevent anchoring in the sea grass bed to the south of Baradal, which is used as a feeding ground by turtles and a nursery area for reef fish. The yacht anchoring zone could be further delimited by mooring buoys along some of its other edges, where believed necessary to protect coral reefs or other marine resources from anchor damage. Additional edge-marking mooring buoys could be deployed, for example, in the Petit Tabac lagoon, or along the south shore of Petit Rameau. The overall number of buoys used, however, should be limited to the minimum necessary to clearly mark the boundary and thereby protect resources.

Use of the mooring buoys will incur a fee to cover the cost of their maintenance, which will be payable in addition to the park entry fee. Anchoring within the anchoring zone to the west of the buoys, however, will not be charged.

No anchoring will be permitted by any vessels outside the proposed anchoring zones. Any dinghies or dive boats wishing to drop snorkellers or divers close to the reefs must either drift or moor at one of the small blue mooring buoys to be provided at intervals inside and outside



Horseshoe reef (see Figure 11). Most previous plans did not propose any charge for the use of these dinghy moorings, and this approach was supported by most users during the consultations for this plan. The fee schedule gazetted by government in December 2006 (see Section 15), however, does require fees for the use of dinghy and dive moorings, payable in addition to the entry fees. No such dinghy mooring buoys would be provided in the Mayreau Gardens area, where the stronger currents mean that most divers drift through the reef channels and are picked up later downstream.

The rules applying to anchoring and mooring are summarised below. The different colours and types of marker buoys are described in Box 2.

<ul style="list-style-type: none"> <li>• No anchoring by yachts, dinghies, dive boats or other vessels inside the protection zone, except over sandy substrate in the designated anchoring zones among the Cays and north of Petit Tabac.</li> </ul>
<ul style="list-style-type: none"> <li>• No overnight mooring or mooring of vessels over [25ft (7.6m)] in length, on the small blue dinghy moorings around Horseshoe reef.</li> </ul>
<ul style="list-style-type: none"> <li>• No mooring on the white yacht moorings except by boats up to 70ft (18.3m) in length, and on payment of the required mooring fees.</li> </ul>
<ul style="list-style-type: none"> <li>• No entry to the yacht anchoring zones by vessels over 100ft (30.5m) in length or that sleep more than 25 persons.</li> </ul>
<ul style="list-style-type: none"> <li>• No anchoring by cruise liners except at the zones provided and within the size limits allowed.</li> </ul>
<ul style="list-style-type: none"> <li>• No noisy activities that cause disturbance to other park users.</li> </ul>

**Box 2. Marker buoy types (based on definitions of Cordice, 1998)**

<ul style="list-style-type: none"> <li>• Large white buoys: moorings for yachts up to 70ft (18.3m).</li> <li>• Small blue buoy: moorings for dinghies while diving, snorkeling etc, only for vessels up to 25ft (7.6m), only for day time use.</li> <li>• Small red buoy: markers for conservation exclusion zones (no access within 50m, not to be used for mooring).</li> </ul>
---

**Actions**

Research is needed to better understand different aspects of the carrying capacity of the lagoon areas of the park. As discussed in Section 8.2.1, the following investigations are required.

- The social impacts of different yacht numbers should be assessed using visitor surveys or questionnaires to be returned by yachters on their departure from the park.
- The ecological impacts of the visitors should be studied by recording water quality parameters at different seasons, weather conditions and with different numbers of yachts (and taking account of the use of holding tanks where available). Supporting studies of the oceanographical conditions within and around the park (including current velocities and directions at different tidal states and prevailing wind/wave directions) would also assist in assessing the likely impacts of different anchoring and mooring zones.

### 13.1.5 Windsurfing zone

Objective: To provide a location for wind surfing within the park, that is close to the Cays, but clearly separate from the anchoring zones and reef areas.

Windsurfing shall be permitted in a zone approximately 1km by 250m to the north of Petit Rameau, but inside the Horseshoe reef. Given the nature of this activity, no specific demarcation is proposed. Windsurfers would simply be expected to limit their positions to avoid getting too close to the reef on the north side, or to Petit Rameau on the south side, or any anchored cruise liners to the south or west.

- |  |
|--|
| <ul style="list-style-type: none"><li>• No windsurfing within the protection zone except inside the designated windsurfing zone.</li></ul> |
| <ul style="list-style-type: none"><li>• No windsurfing over areas of visible coral reef.</li></ul>   |
| <ul style="list-style-type: none"><li>• Windsurfers must give way to any yachts or other vessels that pass through the zone.</li></ul>     |

### 13.1.6 Conservation exclusion zones

Objective (1): To provide protection to species of special concern (e.g. vulnerable, threatened, endangered or over-exploited species of high commercial value) and to any habitats which are critical to the survival of such species (e.g. breeding, nesting, nursery, feeding and roosting grounds).

Objective (2): To set aside some parts of the park and restrict any human use, access or influence and thereby provide 'control' locations to estimate the effects of use in other open areas and provide guidance for management.

Given the goal and objectives of the TCMP to protect biodiversity as well as allowing compatible uses and supporting local livelihoods, it is proposed that a number of 'conservation exclusion zones' should be identified. These areas would include some of the biologically richest parts of the park and would exclude any human entry or activity, with the occasional exception of scientific monitoring and research.

The boundaries of any conservation exclusion zones in park waters would be marked with small red buoys, which should not be approached or used as moorings by any member of the public. Any terrestrial zones on the park's islands should be fenced off and clearly signed. While some parts of the cays may be zoned for protection as 'CEZs', it is not proposed that any whole island should be placed off limits.

- |  |
|--|
| <ul style="list-style-type: none"><li>• No entry to conservation exclusion zones except for the purposes of monitoring or research and with the permission of the marine park manager.</li></ul> |
| <ul style="list-style-type: none"><li>• No boats to approach the small red buoys marking any marine conservation exclusion zones closer than a distance of 50m.</li></ul>                        |

#### **Actions:**

- The locations of the proposed conservation exclusion zones have not yet been identified. This should be done as a matter of priority, based on available scientific information and with the inputs of local experts (both marine and terrestrial) and resource users. For the marine areas, the maps prepared by CCC (2002) should be of particular value for this purpose.

- The reasons for selecting and designating any given area as a conservation exclusion zone should be clearly stated in future versions of this plan. The need for extension or revision of the zones should be kept in review based on the outcome of the monitoring programme.

### 13.2 Development of zonation plan

Having agreed the overall intention of the zonation plan, and the objectives and regulations associated with each zone, the exact locations of any boundaries must be identified, both on maps for inclusion in park publicity materials, and on the ground using signs and marker buoys.

The zonation plan should be enacted in national legislation along with the other regulations covered in the following section, to give the necessary legal powers for enforcement.

Particular attention will be required here in confirming the locations of the anchoring zones, and marking where appropriate, and in deciding an initial set of conservation exclusion zones. The effectiveness of the zonation system should be reviewed on an annual basis, and adaptations made where needed. Modifications should be outlined in each new management plan.

#### **Actions**

- The zonation plan should be gazetted as a part of the formal legislation of the park.
- The exact locations of each proposed zone should be identified both on maps provided to park users, and using signs and/or marker buoys as appropriate for each zone

## 14. Rules and Regulations

The objectives of regulating activities within the TCMP are as listed below.

- To preserve and protect the coral reefs and the other marine and terrestrial habitats of the Tobago Cays.
- To maintain genetic diversity and representative ecosystems and to protect endangered species.
- To minimize and manage the impacts of human activities on natural resources and processes.
- To maintain populations of finfish, conch, lobster, turtle, sea moss and other marine species of commercial, tourism and recreational value.
- To maintain and increase income from tourism and fisheries through practical and effective resource conservation.
- To increase the production of low-cost sources of protein (seafood), on which local diets are heavily dependent.

The following sections outline the TCMP rules and regulations relating to different types of park activities. Regulations which have already been confirmed under SVG law are listed first in each table, shaded in grey rows. For each regulation, the supporting legislation (authority) is given in the right column of each box. Those additional proposals made in the various previous plans that were confirmed for implementation at the 2007 consultations are listed next, along with their original sources, in unshaded boxes. These additional regulations now need to be

gazetted as SVG laws to enable their enforcement by park staff. The legal obligation of licensed operators and TCMP visitors to comply with the regulations of the park should be clearly stated on all licenses and permits.

### Actions

- New regulations proposed in this section, and revisions to existing regulations should be gazetted under SVG law to enable enforcement.

### NB: Users' knowledge of the TCMP rules

Visitors to the TCMP are held responsible for having a complete knowledge of the rules of the park. To facilitate park users in complying with these rules, copies of the finalized list of rules should be made available at all ports of entry and on site in both concise form (e.g. as a TCMP brochure) and in detailed form (e.g. as a TCMP Guide Book). Such materials are to be developed under Section 18.

## 14.1 Entry to park

• No commercial activities except by registered operators and in the areas designated for such purpose.	1997 Act No. 9
• Registered commercial operators must display their registration number on the bow of their vessels (water taxis, dive boats and day charter boats) or carry their registration cards (vendors) while working in the park.	Cordice 1998 (revised)
• With the exception of registered commercial operators and the crew of their vessels, no entry to the protection zone of the park except on payment of the required entry fee.	Cordice 1998 (revised)
• No cruise ship passengers to enter protection zone (originally stated as 'recreational zone') except aboard vessels registered with the marine park (i.e. local water taxis and tour operators).	Cordice 1998 MEDO 2003
• No tenders of cruise ships to operate in any part of the park except Saline Bay and Twassante Bay on Mayreau.	MEDO 2003
• No entry to the park by cruise ships or local excursions except where such visits are schedule in advance and approved by the park manager.	FMC, 1995
• No more than one large cruise ship or local excursion to visit the park each day.	FMC, 1995

## 14.2 Boats

• No mooring or anchoring in the TCMP prior to paying the prescribed fees. [NB: This existing regulation needs to be amended to allow some boats to anchor first and then pay their fees to the rangers on patrol in the park.]	1998 SRO No. 26
• No boats to exceed a speed limit of 10 knots, while within 240 yards of an anchorage or mooring site. [NB: This speed limit is now seen as too high, at least in the lagoon area of the park. This regulation should be repealed, and the provisions of the Power Craft Act adopted instead, as below.	1998 SRO No. 26
• No boats to exceed a speed limit of 5 knots within 100 yards of a beach or harbour area, or 10 knots within 200 yards of a beach.	1990 Power Craft Act (quoted in Cordice, 1998)
• No sale of fuel within the protection zone of the park.	MEDO 2003

### ***Holding tanks***

As noted in Section 13.1.4, scientific research is needed to determine the impacts of pollution from yachts in the lagoon area, especially from yachts not fitted with holding tanks. Since many cruising yachts (especially the smaller and older ones) do not have holding tanks, further rules may need to be added following these studies. A separate anchoring zone may be provided for example, in a location that would minimise the damage to marine life caused by such vessels. It is also understood that other national SVG legislation (a Shipping Act?) covers holding tanks and may provide the controls needed for the park. In the interim period, it is also suggested that yachts without holding tanks be advised not to flush their toilets while within the park. A notice on this issue should be included in the education materials produced by the park, and on any entry permits that are issued to yachts.

### **14.3 Snorkeling and scuba diving**

<ul style="list-style-type: none"><li>No diving in the TCMP except through a [registered] diving club or diving shop, and on payment of appropriate fees.</li></ul>	1998 SRO No. 26
<ul style="list-style-type: none"><li>Only locally owned and registered dive clubs and shops, and foreign owned dive clubs and shops registered in SVG in 1998 to be eligible for diving licenses.</li></ul>	1998 SRO No. 26
<ul style="list-style-type: none"><li>No snorkeling or scuba diving in conservation exclusion zones (to be identified).</li></ul>	--

### **14.4 Other water sports**

<ul style="list-style-type: none"><li>No wind surfing except in defined zones away from coral areas (see proposed zone to north of Petit Bateau, but inside reef edge).</li></ul>	Cordice 1998
<ul style="list-style-type: none"><li>No jet skis allowed in any part of the park. [Believed to be banned nationally by other SVG legislation: to be confirmed.]</li></ul>	
<ul style="list-style-type: none"><li>No water skiing or other water sports requiring the use of motorized vessels in the protection zone of the park.</li></ul>	Cordice 1998

### **14.5 Fishing**

<ul style="list-style-type: none"><li>No fishing in any part of the TCMP, except with the prior permission of the board. [It is proposed that this regulation should be amended to allow fishing in the management zone of the park, including the west of Mayreau and Catholic Island and Jondall. Such areas were outside the fisheries conservation area designated in 1987. Exceptions to the rule may be made under Section 6.(2) of the 1997 Marine Parks Act.]</li></ul>	1997 Act No. 9
---	----------------

### ***Future fishing zones?***

The Fisheries Regulations 1987 (SRO 1987 No 1) established a number of national fisheries conservation measures for lobster, turtle, conch, corals and aquarium fish, and restrictions on the use of spear guns (require a license) and tangle nets (banned outright). In the same regulations, the 'eastern coast of Mayreau' and the waters and reefs of the Tobago Cays were designated a 'conservation area' in which all spear fishing was prohibited. As shown in Figure 11, the fisheries Conservation Area is smaller than the TCMP, but nevertheless includes all of

the islands and nearly all of the coral reef areas. The later 1997 designation of the TCMP as a marine park provided more power than the conservation area by banning *all* forms of fishing in the park, but was not then clear on the area involved (only the actual islands were included in the 1997 order).

Most local fishermen appear to realize that uncontrolled exploitation has led to stock depletion and constrained their catches, and that some restrictions are now needed. In future, however, it is hoped that the park would contribute to providing livelihoods for local fishers and food security in the southern Grenadines. If no fishing is allowed in any part of the park, there may be no clear mechanism by which fishermen could benefit from any 'overspill' of fish produced in the park. Consideration must therefore be given to allowing some types of fishing, or limited numbers of locally licensed fishermen, in some parts of the park. Some fish produced in the park may then swim out to be caught in these areas without damaging stocks overall. Without such areas, since the park now includes nearly all of the sea bed shelf as delimited by the 20m depth contour, there may be little opportunity for catching fish around the park border. The 2007 consultations agreed that fishing should be allowed within the management zone of the park, including the Catholic Rocks areas used traditionally by Mayreau's fishers. Any future changes to the zonation policy for the park to allow fishing in other locations (such as around Mayreau Baleine) should be guided by monitoring data confirming the recovery of key fish species (see Annex 1) and scientific studies confirming the ability of local fish stocks to sustain the proposed levels of exploitation.

#### 14.6 Infrastructure (buildings and moorings)

• No removal or damage to any TCMP equipment or facilities including buoys	1997 Act No. 9
• No permanent or semi-permanent facilities to be erected on the Cays	FMC, 1995

#### 14.7 Resource extraction and pollution

The beaches and other areas of the Tobago Cays may be used by visitors. However, the removal of any geological items or any vegetation is prohibited, as described below. Such rules should be interpreted as prohibiting the removal of sand or Tobago Cays 'green stone' (MEDO, 2003), and the collection of seabird eggs or hunting of iguana in the park.

• No damaging or impairing the growth of any flora or fauna.	1997 Act No. 9
• No object to be removed from the marine park, except with prior permission of the board.	1997 Act No. 9
• No damaging the substrata, or causing pollution of the air or sea.	1997 Act No. 9
• No garbage to be disposed of either on land or in the sea within the park.	Cordice 1998
• Garbage generated on shore to be removed by those responsible.	MEDO 2003

#### ***Solid Waste Disposal***

The TCMP takes a zero tolerance stance on garbage disposal inside the park. Garbage is not to be disposed of on any island within the park, nor dumped overboard into the marine environment. Guests of the park are required to manage their own garbage aboard their vessels unless or until it is collected by authorised water taxis or other collectors. Proposals for garbage collection are described in Section 17.4.

## 14.8 General

<ul style="list-style-type: none"> <li>No filming, underwater or on land, except on payment of the prescribed fee. [This regulation requires clarification that it is intended to relate to filming <i>for commercial purposes</i>.]</li> </ul>	1998 SRO No. 26
<ul style="list-style-type: none"> <li>No beach barbeques except on the beaches of Petit Bateau, with prior permission of TCMP, and on payment of the agreed fees.</li> </ul>	Cordice 1998 (amended)
<ul style="list-style-type: none"> <li>Barbeques must use coal / fuel brought in from outside, not forest wood.</li> </ul>	Cordice 1998
<ul style="list-style-type: none"> <li>No open fires allowed in any part of park.</li> </ul>	Cordice 1998
<ul style="list-style-type: none"> <li>No domestic animals allowed on the Cays.</li> </ul>	MEDO 2003
<ul style="list-style-type: none"> <li>No camping on the Cays except where permitted by the board.</li> </ul>	MEDO 2003
<ul style="list-style-type: none"> <li>No salvage of wrecks except where permitted by the board and as advised by the Receiver of Wrecks, of the Ports and Marine Department.</li> </ul>	MEDO 2003

### **Barbeques**

The only island currently designated for holding barbeques within the protection zone is Petit Bateau. To hold a barbeque in this area, permission must first be obtained from the park manager and a fee paid (see Section 15). Following the barbeque, the site will be inspected by the park staff. Unless the area is sufficiently clean and all waste has been removed, permission will not be granted to the same person to hold barbeques in future. Any open fires must utilize coal brought from outside the park as fuel, not wood from the forests of the Cays.

## 15. User fees (park entry fees)

Objective: To enable the TCMP to become financially self sustaining by sharing the costs of management among the users of the park.

### 15.1 Fee rates

In 1998, the Marine Parks (Tobago Cays) Regulations (SRO 1998 No. 26) established yacht entry fees for the TCMP based on the size of the vessel, at between US\$15-25 per 48 hours, or US\$60-100 per week. This fee system was perceived as unclear and difficult to implement and an alternative 'per head' system was immediately proposed. ECLAC (2002) advised that the fees should be portrayed as 'park entrance fees' rather than as a 'head tax' or 'park fee' or any other type.

Following consultations in three locations in September 2005 (Anon, 2005), the entry fees and other charges for activities in the TCMP were then agreed by the Board and submitted for government approval as listed in Box 3. Such approval was subsequently received and the fee structure gazetted on 7 November 2006. Around the same time, the board gave notice to park users that these fees would become due from 2 December 2006 onwards, coinciding with the re-launch of the park on that date.

Under this revised system, all park users are required to pay an entry fee of \$10, allowing a stay of up to 24 hours. Longer stays require additional payments or larger advance payments. The entry fee only applies for access to the 'protection zone', as described in Section 13. Visitors to Mayreau and local residents of that island should not be required to pay the entry fees (FMC, 1995).



The current entry fee provides for a visit of up to 24 hours. ECLAC (2002) suggested a visit limit of not more than *two* nights. A marine parks pass was also suggested as an option by Cordice (2003) at a rate of EC\$13, with a limit of up to 48 hours to be spent in the park. If the park is getting too crowded under the new system and some boats are staying too long, a 48 hour maximum stay period could be introduced. Such options should be kept in review. Since boats will now have to pay for each night spent in the park, it is expected that the average length of stay and the numbers of visiting yachts will decrease.

In addition to the entry fees, separate fees are to be paid by those yachts using the yacht moorings provided by the park and for the use of dinghy moorings. No new yacht or dinghy moorings have yet been deployed, so these fees are not currently collected.

**Box 3. TCMP entry fees, licenses and permits, as agreed by cabinet on 1 November 2006 (all in EC\$).**

<u>Entry fees</u> (includes visitors on private yachts, charter boats, cruise ships, for diving etc):	
Per person	\$10 per day (up to 24 hours)
<u>Moorings</u> (where used, anchoring also proposed to be allowed at no charge inside anchoring zones)	
Yachts 40 ft and under	\$40 per 24 hours
Yachts 41-70 ft	\$50 per 24 hours
Yachts 71-100 ft	\$60 per 24 hours
Dinghies	\$15 per 24 hours
Dive	\$10 per 24 hours
<u>Local operators licenses</u>	
Vendors:	\$20 per month or \$200 per year
Water taxis:	\$30 per month or \$300 per year
Charter boats	\$140 per month or \$1,400 per year (for each boat)
Dive shops:	\$25 per week or \$80 per month or \$800 per year
<u>Permits</u>	
Filming:	\$300 per permit (terms and provisions to be prescribed)
Wedding ceremonies	\$300 per ceremony
Local excursion	\$2 per person
Duplicate Permit	¾ of original fee
<u>Notes:</u> (1) The \$10 diving fee included in the 7 November fee schedule is interpreted here as an entry fee for divers, not as a separate fee payable by divers in addition to the park entrance fee. (2) See also proposal for barbeque fees below, payable in addition to park entrance.	

The new fee system proposes some clarifications to the licensing of commercial operators in the park, requiring payments of \$200-800 per year for different types of activity (or alternative monthly payments as in Box 3). These resolve some of the uncertainties in the original system (see Section 16), but some further changes to the legislation are still needed to require commercial operators to obtain a licence before commencing operations in the park (see ECLAC, 2002, Section 8).

Permits are also required for commercial filming, the holding of wedding ceremonies within the protection zone and for local excursions. For the purpose of this section, an 'excursion' is defined as a visit to the park by [30] or more persons on board a single boat, where the majority of those persons are Vincentian nationals, and where each person pays a fee to the organiser

of the excursion. Excursion visitors are thus required to pay a reduced entry of \$2 per person, payable through the excursion organiser in exchange for the permit. Apart from these excursion visitors, the 2007 consultations agreed that other Vincentian nationals visiting the park (e.g. those persons owning their own boat) should still pay the full entry fee.

### **Barbeques**

Since re-launching the park in December 2006, the park has required a payment for each barbeque held on Petit Bateau. This potentially includes barbeques held by private parties, but more often involves barbeques arranged by vendors or other local operators where meals are sold to the visiting tourists. The fee charged (\$25 for a barbeque for up to 10 persons, or \$10 per person for larger sized groups) is payable in addition to the park entry fee. As noted in Section 14.8, persons organising barbeques are expected to fully clean their sites after use and remove all garbage.

## **15.2 Collection of park user fees**

The park entry fees may be collected in four main ways:

1. at customs entry points, for yachts clearing into the country;
2. by local bareboat and charter companies and cruise ship agents on behalf of their customers;
3. at the TCMP office in Union Island; and
4. direct by the rangers on arrival at the park.

Of these options, the advance payment methods (1-3 above) are to be preferred whenever possible. It is recognized, however, that this will not always be possible (e.g. when yachts change plans at the last minute due to weather conditions), and that there is a need to allow payment at the park. Additional and more convenient options for payment could be provided in future, e.g. by offering facilities for credit card payment at the park office, or the advance booking and payment of entry fees through the internet on a TCMP website (IJA, 2004c).

Entry tickets may either be purchased directly from the TCMP Management or via selected third parties (customs offices and tourist operators). Tickets may either be issued to individuals, or to cover a group of persons, such as the full crew of a yacht or all of the passengers on a day charter boat.

To ensure that the system is transparent and provides the necessary physical proof for each party involved, a triplicate ticketing system has been adopted. For each numbered ticket that is sold, the top copy is given to the purchaser, the second copy is given to the TCMP office for their records, and the third copy stays in the ticket book to provide the proof of sale for the seller.

Article 15 of the 1998 Marine Parks (Tobago Cays) Regulations requires any person in charge of a vessel which is anchored or moored in the marine park to produce his fee receipt for inspection by an authorised officer. Section 16 of the 1998 Regulations empowers the board to revoke or suspend any 'permit' whose owner has contravened any of the park regulations.

As proposed by Cordice (2003), the crew of a commercial yacht which frequents the TCMP, e.g. in providing day charters, is exempt from paying the park entrance fees.

### 15.3 Concerns raised over the user fees system

The user fees system and its rather sudden reinstatement by the Board in December 2006 has caused some degree of controversy among park users, including the points summarised below.

- Charter operators who had already advertised prices for the 2006-07 season and taken some bookings in advance requested a longer notice period before being required to pay the entry fees this season. Some argued it would be better to start charging fees at the start of the 2007 low season (May to October) to give the park administration time to get the system into good operation before the arrival of large numbers of boats.
- Some persons have argued that those visitors from cruise liners who usually only visit the park for a short period (as little as one hour) should pay less (say \$5 rather than \$10) than those yacht visitors who generally stay for a longer period, often overnight. Lower fees for shorter visits were proposed by most of the previous plans (see Box 4).
- Some persons have argued that the park costs should be covered by the existing payments already made by tourists to visit St Vincent and the Grenadines, and by local operators to work in the area. These fees are listed in Box 5.

Although some complaints were made about the public consultations held on the fee system in September 2005, other people have suggested that the fees are fair and that it is now time to move on with implementation (Anon, 2005). Most users say that they don't mind paying a reasonable fee for use of the park, so long as it is actually used in the management, maintenance and improvement of the park.

In consideration of the short notice given by the Board prior to the introduction of the park fees, those charter boats and cruise-ship passengers who had already taken advance bookings and payments are being charged a reduced rate of \$5 per entry for the 2006-07 season. From next season, the full \$10 per person will be due.

**Box 4. Per-person entry fees proposed in previous TCMP plans (all EC\$ except where stated, and all per 24 hours except Heyman, and ECLAC?)**

<u>Heyman et al, 1988</u>	\$10-15 for yacht visitors	\$4-7 for air excursionists and cruise ship passengers (entry fees, not daily, so may stay more than 24hrs)
<u>Cordice 1998</u>	\$19 (US\$7) for yacht visitors	\$5-10 for divers and day charter visitors <sup>2</sup>
<u>Cordice 2000</u>	\$13 for yacht visitors	\$6 for divers and day charter visitors
<u>ECLAC 2002</u>	\$5-7.50 (US\$2-3) for all	
<u>Cordice 2003</u>	\$10 for yacht visitors	\$5-8 for divers and day charter visitors.
<u>MEDO 2003</u>	\$13 for yacht visitors	\$6 for divers, \$5 for others

**Box 5. Other taxes and licence fees paid by visitors and commercial operators in St Vincent and the Grenadines.**

- Tourists arriving by plane for a one-day visit already pay \$40 airport departure tax and \$5 cruise tax.
- Operators of locally-based yachts with fee-paying passengers pay an annual licence fee to customs of \$300 (up to 30 ft), \$500 (31-50 ft) or \$700 (over 50 ft). Passengers on these boats pay the \$5 per

<sup>2</sup> Different figures of \$5 and \$10 for day charter visitors are quoted in the June and August 1998 versions of the Cordice 1998 plan.

day cruise tax.

- Operators of bareboat yacht charters pay annual licence fees in the above three length categories of \$600, \$1,000 or \$1,400; or can alternatively require the charterer to pay an 'occasional licence' fee on each entry to the country of \$60-140.
- Foreign yachts chartered with crew pay a licence fee of \$4/foot/month, or \$30 per foot per year, plus the \$5 per day cruise tax while in country (crew exempt from cruise tax).
- Visitors on private yachts pay cruise tax of \$5 per day while in St Vincent and the Grenadines (pay \$35 on entry covering a stay of up to 7 days, no further charge above this).
- Visitors on board cruise liners pay cruise ship head tax of \$15 (US\$5.7).

### **Actions**

- Implementation of the park user fee system will require a computerised database system and competent data manager and data entry clerk. Such system should be able to provide prompt and up to date information to the rangers as to which visiting yachts, excursions, day charterers etc have paid on any given day.
- A credit card merchant account should be established at the TCMP Office to facilitate direct payment of the entry fees by visitors. The TCMP web site should also be re-established to include an on-line, advance payment facility.
- The current entry fees are similar to the rates charged in other marine parks. To ensure that the optimal fees are being charged, a 'willingness to pay' study may be undertaken.

## **16. Support of sustainable livelihoods in and around the park**

Objective: To provide sources of employment and business opportunities within and surrounding the park that are compatible with its sustainable use.

Noting the two main goals of the TCMP – to protect and enhance the natural resources of the TCMP while simultaneously allowing for their sustainable use (see Section 10) – this section describes the arrangements for the licensing of commercial activities in the park, and other support to be provided to local stakeholders to develop or pursue *sustainable* livelihoods either within or around the park.

### **16.1 Licensing of commercial operators**

All commercial operators in the TCMP – including dive shops, water taxis, vendors and local charter boats (Section 6.2) – are required to obtain an operator's licence at the rates specified in Section 15 (Box 3). Operators' licenses may be renewed annually or monthly. Commercial photography and the holding of wedding ceremonies and local excursions in the marine park also require the purchase of a permit.

Licences and permits should detail the activities allowed, including the nature of trading to be carried out by the operator, and the period covered. Licensing will provide the main mechanism for controlling commercial activities in the park and the volume or extent of such activities. Commercial operators would be expected to comply with all park regulations, and with any special conditions attached to their license, and to follow any guiding principles or service

standards established for the park (e.g. as in Box 6). Any non-compliance will result in the suspension or cancellation of licenses by the Board.

**Box 6. Guiding principles relating to the provision of services by licensed operators within the TCMP (based on IJA, 2004c).**

- The general welfare of visitors to the park, including their safety, security and health should be protected at all times.
- The ecosystems, habitats and species of the park, and its landscape and scenery must be maintained and any uses of these resources must be sustainable.
- Visitor awareness of the natural values of the park is critical to the conservation and sustainable use of its resources.

All vessels used in the park under a commercial operators licence must display the licence number in plain view on the bow of the vessel. Identification cards will also be issued to each licensed individual which must be worn or carried at all times when conducting commercial activities in the Tobago Cays.

Land-based commercial activities inside the protection zone will be limited to Petit Bateau and not permitted on any other island (see Section 14.8).

The numbers of licenses to be issued should be agreed with user groups in the first instance and kept in review in future plans. Criteria should be agreed to assist the park in the identification of qualified commercial operators, and for any transfers of licenses, e.g. to a new operator on retirement or withdrawal of a previous licensee.

The licensing of commercial workers in marine parks is only partly covered by existing legislation. The Marine Parks Act (No.9 of 1997) states that no commercial activities shall be permitted in a marine park, except in areas designated for such purpose (article 6.(1)(f)). The Act does not, however, provide for licensing of commercial activities, nor does it define what constitutes commercial activities. The Marine Park (Tobago Cays) Regulations of 1998 (SRO 1998 No.26) do not designate any areas within the marine park for commercial activities, but do define “commercial workers”, for the purpose of charging license fees as water taxi operators and T-shirt vendors.

Such omissions may be partly due to the 1999 acquisition agreement for the TCMP, which required that the “*Tobago Cays will be dedicated to use in perpetuity as a National Park ... within which no buildings structures fixtures or construction of any form or any commercial activity whatsoever will be permitted save in pursuance of the objectives of and in furtherance of the maintenance of a National Park*” (see Appendix 7 of MEDO, 2003). The draft 2005 Marine Parks Bill makes full provision for the issuing of licenses and permits as an activity that may be delegated by the new Marine Parks Authority to any of its local committees or partners (such as the proposed TCMP Management Board or Committee). The areas designated for commercial operations are defined in this management plan (Section 13) and need to be confirmed in law.

**Actions**

- The national legislation on the issuing of licenses and permits for commercial operations in marine parks must be updated (e.g. by enacting the 2005 draft Marine Parks Bill) to enable the TCMP to regulate commercial activities and collect licence and permit fees.

- The optimal number of water taxis, vendors and other licensed operators should be discussed with such stakeholders taking account of the need to maximize local employment opportunities while maintaining individual incomes and providing good services to other park users.
- Any criteria to be used for the approval or rejection of applications by different operators should be discussed and agreed with stakeholders.

## **16.2 Other support for sustainable livelihoods within and around the TCMP**

Stakeholders who live in or around a protected area and are unable to access financially attractive and sustainable livelihoods are often found to undermine the conservation objectives of the area by holding on to destructive patterns of resource use. To simultaneously achieve the conservation and social benefits of the TCMP, this plan includes a range of activities that are designed either to improve the sustainability of local livelihoods or to develop alternative livelihoods for those activities that are not compatible with goals of the park.

A level of supporting finance for these areas is provided by the 'livelihoods subproject' component of the OPAAL project (funding line 202.2.1 of the OPAAL budget) in addition to other project driven assistance such as the Sustainable Grenadines project and government led initiatives such as training in hospitality for the tourism sector. The training needs of local stakeholders in these areas were identified by Parsram (2007, see Table 8). Potential project activities were also identified by the OPAAL 'baseline studies' of Ecoengineering (2007) and in the 'livelihoods assessment' report of Espeut (2006). Suggestions made to develop or improve sustainable livelihoods include:

- training of resource-users on environmental sustainability and associated business opportunities;
- training in the production of high quality art and craft;
- training in tour-guiding skills, including species identification;
- the placement of unobtrusive signs on the Cays, such as labels for tree species alongside the terrestrial trails, where the signs are made by local user groups or schools;
- removal of the conch shell mountains, for processing and sale as white lime;
- sea-moss farming, e.g. for displaced fishers (training in this activity was provided in Union Island in early 2007 by the Sustainable Grenadines project; any such farms should be outside the park boundary); and
- provision and equipping of a boat to allow displaced fishers to travel into the deep sea to catch fish.

At the time of this management plan revision (October 2007), a livelihoods subproject proposal had been drafted for OPAAL funding by TCMP staff working in collaboration with staff of the Sustainable Grenadines project. This project includes training and support in several of the areas suggested above and several others (see Section 20.3). Further work is required to more clearly identify livelihoods support initiatives that may be packaged as other OPAAL subprojects. This should include a participative approach to determining the extent to which stakeholders want to increase their involvement in the tourism sector and in what areas. While a focus on art and craft could be attractive for some stakeholders, for example, other areas or approaches may be more suitable for others.

### **Actions**

- Implement the livelihoods subproject, training and other support for TCMP resource users in the development of new or alternative livelihoods, as required to reduce negative impacts on park resources. Funding is allocated for such initiatives under the OPAAL project as 'livelihoods subprojects' (OPAAL budget line 202.2.1).

## **17. Resource management**

### **17.1 Biological resources**

Management of the TCMP's biological resource should include ongoing monitoring and evaluation of the state of different species and habitats, and the design and implementation of regulations as needed to achieve long term protection.

Regulations have already been put in place under the Marine Parks Act to prevent resource extraction, fishing, pollution and any other sources of damage to flora or fauna. Additional protection will be achieved by the mooring and anchoring proposals in the following section. Even with this nominal protection, some critical negative impacts may still occur, particularly if inexperienced divers or snorkellers are allowed free access to the most biologically important parts of the park. To achieve the full protection of the park's biological resources, the zonation plan of Section 13 proposes the identification of 'conservation exclusion zones' that would be used to place some areas completely out of bounds. Such zones need to be identified and entered into the SVG legislation.

Some information is available on the coral reef and fish resources of the park, which may be used in the identification of the conservation zones. Marine resources are badly depleted in some areas, particularly around the 'lagoon' (see Section 5.2.3). Very minimal information is available on the parks' land based resources. Comprehensive surveys are required of the park's vegetation, bird, reptile and other resources to determine the measures necessary for the protection of land based biological diversity.

The impacts of the few introduced goats still remaining on Petit Rameau also require investigation.

Heyman et al (1988) suggested that the piles of conch shells on Petit Rameau could be removed from the beaches, and deposited somewhere nearby in the sea to provide a form of artificial reef and a habitat for marine life. Further consideration would be needed as to where the shells could be moved to and how.

### **Actions**

- Undertake surveys to prepare inventories and determine the distribution of the park's land-based biological resources, including vegetation, birds and reptiles.

### **17.2 Mooring buoys**

Moorings and anchoring are controversial subjects in many marine parks, including the TCMP. While some stakeholders favour moorings as a means of limiting access and raising revenue, others feel that the Cays should be left in as natural a state as possible and that moorings are



simply unnecessary in places with good sand anchorages (see Box 7). This plan proposes a compromise solution that is aimed at limiting anchor damage to fragile habitats, while still allowing unlimited anchoring in appropriate places, including most of the 'lagoon'.

As guided by the zonation provisions of Section 13.1.4, it is proposed that moorings will be placed in the TCMP as summarised below.

- One line of large, white-coloured overnight yacht moorings shall be placed along the edge of the main lagoon anchoring zone, as illustrated in Figure 11 (and possibly in other locations to be agreed). Such moorings will be rated for vessels up to 70ft (21.3m) in length.
- Small, blue dinghy moorings shall be placed for the use of snorkellers and divers both inside and outside the Horseshoe reef,(and possibly in other locations to be agreed). While in the protection zone, but outside the yacht anchoring zones, dinghies (or any other vessels not exceeding [25ft (7.6m)] in length) may use these moorings, but may not use their own anchors.

**Box 7. Some arguments for and against mooring buoys.**

The dinghy moorings that were installed in the park in the 1990s were generally popular with both tourists and commercial operators in the Cays. They were used frequently and served an important purpose in preventing anchor damage on the reef.

In contrast, the larger yacht moorings were not so popular. There are several reasons why some yachts prefer not to use moorings in the Cays. In the first place, the sandy bottom in the 'lagoon' offers an extremely good hold for most types of anchor. During unfavourable weather conditions, yachts shelter in the Cays due to the excellent hold and the protected water. Also, since the bed of the lagoon is sand and not coral, many feel that anchoring is environmentally friendly in this location, so long as boats keep away from the surrounding reefs, which most do, but unfortunately, some don't (see Figure 4).

Some crewed charter yachts are also prohibited from picking up a mooring, since their insurance company does not cover any damage to their yacht, or a third party's property, which results from mooring failure. If there is damage to a vessel while on a park mooring, even if it is not directly due to park negligence, the park could be held liable.

For safety reasons, many sailors living on board their own yachts also prefer to use their own anchors, which they have serviced themselves, rather than a mooring with an unknown maintenance record. In addition, for many cruisers living on their yachts for long periods of time, budgets are tight and an unnecessary mooring will just be seen as an unnecessary cost. Some other sailors, particularly the less experienced charter-boat customers, may prefer to use a mooring as the boat is not their property and since the cost may be less of a concern while they are on holiday.

This plan proposes that some moorings be offered within the TCMP both to raise income from mooring fees and to provide the option of mooring for those sailors who prefer. Such moorings will require maintenance, cleaning and insurance at a significant cost to the park. The costs of the moorings should thus be carefully monitored over time to ensure that they are balanced by the mooring fees that are charged.

Around 50 manta ray moorings were placed in the Tobago Cays area by the French support in the early 1990s. According to MSI (2004), the floats from all but two of these have been lost to poor maintenance and theft, and the anchors lost beneath the sand. Such moorings have thus now all but disappeared. New dinghy and yacht moorings now need to be installed.

A study on the needs and costs of moorings in the Tobago Cays and the Southern Grenadines was recently commissioned by the Ministry of Finance and carried out by Moor Seacure International (MSI, 2004). Based on the substrate in the lagoon, MSI (2004) proposed the use of a 'hydraulic helical embedment anchor mooring system' for the overnight yacht moorings. MSI proposed mooring anchors of 12 ft in length, and 12 inches across the helix blades (see report for full specifications). Such moorings were rated by MSI for yachts up to 60ft (18.3m) in length. It is presumed that larger mooring anchors would be required for the park to allow mooring by boats up to 70ft (21.3m) or larger, as allowed under the fee structure.

The full cost of MSI's mooring system is believed to be in the order of EC\$350,000 (the full financial proposal was not seen, but this figure is believed to include additional moorings in Union Island and Mayreau). To spread out the cost, it is possible that the mooring system could be implemented over a phased approach. It is also likely that some savings could be achieved. MSI (2004), for example, proposed a line of 30 yacht mooring buoys to act as the barrier along the edge of the lagoon. To allow for the necessary swing radius<sup>3</sup>, however, it may only be possible to fit approximately 11 such moorings in between Baradal and Jamesby. A few additional moorings (5-6?) could be placed to make a boundary for the anchoring zone to the north of Baradal, as illustrated in Figure 11.

Regarding the liability issues with moorings, it has been proposed that the tickets issued in receipt of mooring fees should include a statement confirming the park's waiver of liability against any damage arising due to the use of the moorings. The legality of adopting such a waiver needs to be checked by a lawyer considering both SVG national and international law.

### **Actions**

- Discuss and agree with resource users the number and positions of mooring buoys required for both dinghies and yachts.
- Investigate legal implications of providing yacht and other moorings within the park, and the possibility of imposing a waiver of liability for any vessels using the moorings.
- Request MSI and other suitably-experienced marine companies to re-tender for the selected number, sizes and combination of moorings required, for yachts (up to 70ft) and dinghies, and to mark any conservation zones (to be identified).

### **17.3 Maintenance**

A maintenance plan should be prepared and procedures established to achieve the plan's objectives. Maintenance schedules are to be established for various park facilities and infrastructure, including the following:

- patrol boats and related equipment, including the ranger base in the park;
- moorings and marker buoys;
- TCMP office / visitor centre, buildings and furnishings; and
- TCMP IT equipment.

---

<sup>3</sup> MSI (2004) suggest allowing approximately 65m in between each mooring, to allow safe swinging of boats up to 60ft (18.3m) in length.

Given the liability issues, management should be particularly careful of the maintenance requirements for the moorings placed in the park. For the moorings, a one year renewable contract could be established between the board and the locals who participated in the installation of the moorings (preparation of ropes, splicing etc). The contractor would check each mooring twice a month, clean the ropes and the buoys and change any frayed lines. The materials for the maintenance would be provided by the park.

### **Actions**

- On deployment of the moorings and on taking delivery of any patrol vessels and ranger base, prepare maintenance plans as needed and engage maintenance contractors.

## **17.4 Garbage management**

Given the importance of marketing the Cays as a 'pristine' tropical paradise, the park takes a zero tolerance attitude to the disposal of garbage. The amount of garbage on the Cays and underwater in the park is reported by some to be better nowadays than in the past, but there are still problems to solve. Four refuse / bonfire sites were for example observed on the north and south beaches of Petit Bateau in November 2006.

Park rules relating to garbage are covered in Section 14.7. The board proposes that garbage from the Cays should be managed under an arrangement recently concluded with the Southern Grenadines Water Taxi Association. Under this arrangement, licensed water taxis may collect bags of garbage from yachts and transport them to disposal facilities in Union Island. To avoid complaints of over-charging for these services, a standard fee of EC\$ 5 has been agreed for the removal of each bin-liner sized bag of garbage. Only licensed water taxis will be allowed to collect such garbage. Incorrect disposal of such garbage will result in the loss of the offender's license.

## **17.5 On-shore facilities**

Various on-shore facilities have been proposed in previous plans, including the most ambitious \$2.7m plan of Heyman et al (1988) to build an aquarium and visitor centre etc. Such facilities do not appear to be widely supported by current stakeholders, and the aim of this plan is to simply promote the natural features of the Cays in their original condition as far as possible. The only on-shore facilities proposed in this plan are a limited number of nature trails.

Many of the visitors to the Tobago Cays enjoy exploring the islands or just hiking to the top for the view. Well-worn walking trails are visible on all of the cays (see Figure 12, and Espeut, 2006). At the moment, such trails receive no maintenance, and some are quite eroded. Although some clearing is needed to make the trails more accessible, no more natural vegetation should be removed from the islands than is needed to achieve this aim. Any replanting of flora that is undertaken to maintain the stability of trails should use only those species that are native to the cays. Following such physical improvements to the trails, the rangers or commercial operators may provide guided tours to the islands at scheduled times. If such facility is offered to a commercial operator, a new livelihood option would be created. Brochures showing the trails, describing the biodiversity, and discussing safety issues could be prepared.

Consideration was also given in preparation of this plan to the provision of a toilet facility for the vendors permitted to operate on Petit Bateau. Such vendors currently have only the woods behind the beaches when nature calls (Espeut, 2006). With no water or sewage system on any of the Cays, some form of dry toilet system would be required. It is understood that a simple but effective 'Ventilated Improved Double Pit' latrine (VIDP) could be installed at a capital cost of US\$40,000 to \$50,000 (Appropriate Technologies Ltd (2006). A more sophisticated system allowing for better composting (see e.g. at <http://compostingtoilet.org/>) may cost \$250,000 to \$300,000. Either system would require regular emptying and servicing, which could either be linked to the garbage management arrangements or kept as the responsibility of park staff. Any major repairs required for the facility would be the responsibility of the park. Arguments were made both for and against such a toilet system.

### **Actions**

- Design a terrestrial nature trail on Petit Bateau, provide signage and maps, and install and maintain any steps necessary to prevent erosion on steep sections.
- Investigate options for providing on-shore toilet facilities on Petit Bateau and implement preferred solution.



**Figure 12.** The 'hiking trails' across Petit Bateau: (left) the low path between the two beaches; and (right) the more overgrown path via the top of the hill, through the fire-burnt area.

## 18. Public education and awareness

### Objectives:

- To enhance public awareness of environmental issues and thereby build a national constituency for sound resource management
- To contribute to public education in the interpretation of the natural environment

The rules and regulations of the TCMP will only be effective if they are well understood and accepted by the park's many different users. Both visitors and locals must be informed of the 'do's and don'ts' of the park. Vessel masters in particular must be familiar with the park rules. To develop public awareness about the TCMP, a number of different communication products need to be prepared and made widely available to users.

Towards these needs, a communications plan has been produced by the OPAAL project (Fontenard, 2007), based on meetings with stakeholders held in May 2006. The communications plan outlines the key audiences of the park, the information that each audience needs to know, and the media or channels by which this may best be delivered. Some first priority products that should be included in the plan are given in Table 6. These products should be prepared as a matter of urgency as soon as the park rules are firmly agreed for implementation under this first 2007-2009 management plan period (noting that rules may change in future as needed – see Section 23).

**Table 6. First priority communication products for the TCMP.**

Product	Outline contents	Target audience/s	Distribution channel
Leaflet / flyer	<ul style="list-style-type: none"> <li>▪ Summary of park rules and zone map, e.g. as "do's and don'ts of the TCMP"</li> <li>▪ Entrance fees and what they pay for (ranger patrols, garbage collection etc)</li> </ul>	All TCMP visitors	Handed out by rangers and at office; by tour operators, water taxis etc.
Handbook	<ul style="list-style-type: none"> <li>▪ Park objectives</li> <li>▪ Full list of park regulations with legal basis and zone maps</li> <li>▪ park management and decision making arrangements</li> <li>▪ park resources, history and present status</li> </ul>	Key stakeholder groups, management partners etc	By purchase as hard copy from park office, or as free download (.PDF format) from web site.
Web site <sup>4</sup>	<ul style="list-style-type: none"> <li>▪ All information in handbook, plus progress updates, new information, newsletters etc</li> <li>▪ Entry fee details and online payment facility</li> </ul>	Potential visitors	Internet
Information boards / posters	<ul style="list-style-type: none"> <li>▪ Same information as leaflet plus educational materials, illustrations of park resources etc</li> </ul>	Visitors arriving by yacht	Positioned at beach locations on Baradal, Jamesby, Petit Bateau, Petit Tabac and Mayreau; to be easily visible but also discreet.
Park entry signs	<ul style="list-style-type: none"> <li>▪ Instructions to visitors on TCMP entry requirements (e.g. as in Box 8), to be</li> </ul>	Visitors arriving for	Positioned at the two main entry points to the lagoon, i.e. on the

<sup>4</sup> A draft web site was designed and constructed by the park's first manager (Cordice, 2003), but has not been maintained since his departure.



	large enough to be visible to boats entering through the channels	first time	western shores of Jamesby and Petit Rameau, adjacent to the channels between those islands and Petit Bateau.
Advertorials	<ul style="list-style-type: none"> <li>▪ Objectives of the TCMP, resources of the park, progress updates on park establishment, etc</li> </ul>	Potential visitors, international and regional tourists	'Compass' website and newsletter; airline magazines; sailing and tourism magazines etc.
Infomercials / public service announcements	<ul style="list-style-type: none"> <li>▪ As above for advertorials</li> <li>▪ Importance of conserving resources and sustainable development</li> </ul>	SVG public; Caribbean public	Government information service (SVG) on TV and radio; Caribbean Media Corp. for distribution to other nearby islands.

All communication products should be produced in a standardised corporate style, and with an approved TCMP logo etc. The preparation of such clearly related products will help to emphasise the re-launch of the TCMP and the intention to move forward from this time with a new management approach and purpose.

**Box 8. Example content for the proposed 'park entry signs'.**

Welcome to the Tobago Cays Marine Park.  
Please call VHF Channel [??] on arrival to have your ticket checked or to pay entry fees.  
Do not enter without having cleared immigration to St Vincent and the Grenadines.

***Future options***

Once the first priority communication products have been prepared and installed, attention may be paid to other communication needs, as guided by the communication plan.

One option that has been promoted in previous management plans is to develop the Clifton office as visitor centre with displays and interactive materials showcasing the park's assets and needs. This may either be in a new block behind the current office, or a small display could be created in the current reception room to be further developed later. A slide show could present the beauty and diversity of the marine life in the area; souvenir items and guidebooks could also be sold to generate a source of income for the park. A notice board could be offered for registered day trip operators and water taxis to advertise their park services.

As SVG's first national marine park, the TCMP should also in due course develop educational materials for the country's school children. These should show why marine resources should be conserved and how, and the long term benefits that may result.

***Actions***

- Finalise communication plan with assistance of OPAAL funding.
- Prepare key communication products and install/distribute as soon as possible after 2007-09 park regulations are agreed.

## 19. Safety and security arrangements

TCMP Management will make all necessary arrangements to protect the safety and welfare of visitors, workers and property. Security ranks as one of the major concerns for visitors to parks and recreation areas. Security arrangements could involve:

- 24 hour 7 days a week presence of park rangers or ranger facility in the park;
- adequate training of rangers manning the ranger outpost in security skills;
- measures to ensure park visitors are fully aware of security arrangements and rules to guide visitor behaviour;
- providing staff with adequate communications equipment (cell phone, VHF);
- ensuring adequate communications links between the TCMP office and the Ranger Outpost and with the police, sea and rescue services;
- adequate maintenance of communications equipment; and
- quick and coordinated response capacity to incidents of thefts, robberies, etc.

Regarding safety, everything possible should be done to reduce the risk of park visitors and park workers getting injured travelling to the park or using the park in any way. Safety arrangements could involve:

- strict adherence to rules governing speed limits for dinghies, swimming, snorkelling and diving in the park;
- minimum standards for the use of life vests and life rings by boats;
- scuba divers to dive in the presence of certified dive operators or dive guides;
- a first aid kit of international standards should be kept at the Visitor Center and all tour guides should carry a portable version of the kit;
- boats travelling at night in the park should use portable lights adequate for navigational purposes;
- boats transporting workers to and from the park should be equipped with navigation instruments and lights and these should be adequately maintained; and
- warning or hazard signs should be kept in a state of repair, should at all times be readable and staff where possible will encourage visitors to observe safety rules.

## 20. Administration

### 20.1 Staffing

Different combinations of staff have been proposed by each of the previous management proposals (e.g. Cordice, 2000; MEDO, 2003; and Dublin, 2005). Estimates of the numbers of rangers included in these plans have, for example, varied between 4 and 12. This plan assumes that the Marine Parks Board will in future become a more nationally-oriented, oversight-providing entity, and that decision making for the TCMP will be delegated to a more locally constituted Management Committee such as outlined in Section 11.2. With such a structure, it is believed that significant voluntary assistance would be provided by better motivated members of the proposed Committee. Guided by the park manager and natural resources officer / marine biologist, such members should be able to take on much of the monitoring, research and developmental needs of the park, leaving the other park staff to focus more on operational matters, including their patrolling and enforcement roles.



Assuming that such an organisational structure can be created, the following full-time, core staff would be required to run the TCMP:

- Park Manager
- Head ranger / warden
- Rangers (6)
- Secretary
- Accounting assistant
- Office attendant
- Natural resources officer / marine biologist
- Education / public relations officer

In addition to the full time staff, assistance will be required each year with the preparation of the park accounts, and with maintaining the park boats and IT systems. Some of these skills may be recruited on a part-time basis or sub-contracted (e.g. boat mechanic). It is understood that the rangers are competent in the routine maintenance required for the park boats.

The park manager is responsible for the day to day management of the TCMP and the supervision of the other park staff, as indicated in the organogram provided in Figure 10. The Manager's responsibilities were defined in the Marine Parks (Tobago Cays) Regulations, 1998, as given in Box 9. The manager should take the lead in developing communication materials and be involved in educational programmes for students of local schools and local community groups. He/she should also maintain contacts with the commercial users of the park to ensure the collection of user fees and to keep them informed about any forthcoming consultations or management decisions.

Due to the need to preserve good relations with local stakeholder groups, the park manager should be disposed to patient negotiation and have some skills in conflict resolution. Assuming that a separate natural resources officer / marine biologist can be recruited, it may be more important for the park manager to have good experience in management and business than in marine biology.

Directly under the park manager, the park warden is responsible for supervising the activities of the rangers in their patrolling of the park and enforcement of park regulations (see Box 9).

The responsibilities of the rangers are not defined by the 1998 Regulations, but should include the following:

- patrolling the park and educating park users on park regulations, both verbally and by distributing the park leaflet;
- collecting entrance fees from yachts entering the protection zone and checking the tickets of yachts that have pre-paid;
- collecting garbage left on the beaches where those responsible can not be identified.

Regarding the numbers of rangers, it is proposed that a staff of six rangers (two teams of three) would provide good enforcement capability, while also taking account of the security and safety needs of the staff and the small size and limited budget of the park. A recent proposal by the SVG Coastguard showed that 12 rangers would be needed to provide a permanent 24 hour watch in the park, allowing for shifts and leave. Such a '24-7' presence may be provided in future if required, and when the ranger outpost station is put in place. For the time being, a

compromise solution with two teams of three rangers working a duty rota system (Box 10) would allow two rangers to patrol the park during the day while a third ranger remained on the ranger outpost vessel stationed in the lagoon (see Section 20.4) to receive calls and enquiries.

**Box 9. Responsibilities of the park manager and warden, as defined in the Marine Parks (Tobago Cays) Regulations, 1998.**

**Park Manager**, responsible for:

- the enforcement of the decisions taken by the Board [this should be extended to include the local TCMP Management Committee];
- the preparation of an annual report on the state of the marine park to be submitted to the Board;
- ensuring the efficient implementation of the work program and policy decisions of the Board;
- the management of all finances consistent with the policies of the Board;
- working with other relevant agencies using the media to promote the marine park as a tourist resort and attraction;
- ensuring that the marine park is managed along commercial lines;
- ensuring that the ecology of the marine park is sustained;
- designing and developing on a monthly basis information for the education of all users of the marine park; and
- co-ordinating the design and development of brochures, pamphlets, leaflets, maps and other information that may be necessary with respect to the marine park for distribution to the public.

**Park Warden**, responsible for:

- patrolling the waters of the marine park;
- the distribution of brochures and information booklets about the marine park to visitors;
- the collection of park fees and control of the number and size of vessels entering the park;
- the collection of garbage and cleaning up of beaches;
- assisting in reef monitoring and educational programmes; and
- regulating the use of the parking and refreshment facilities [this last point should be replaced with 'ensuring the maintenance and upkeep of park boats, moorings and other park equipment'].

**Box 10. Proposed duty rota for the two teams of TCMP rangers.**

A fortnightly duty rota is proposed to enable two teams of three rangers to alternate their duties as shown in the table below. Staff on 'day duty' would work approximately 09.00 to 16.00 in the Tobago Cays, patrolling, collecting fees etc. Staff 'on call' would work in the office when required or take over from the day duty staff in the Cays at the end of the day shift when needed.

This approach would provide a regular daytime presence in the Cays while also allowing the flexibility for the 'on call' team to attend to emergencies or other demands in the park outside normal daytime hours, or as needed on particularly busy days. Some flexibility in the normal 'day duty' times would avoid there being consistent times with no ranger presence in the park.

<b>Week 1</b>	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Blue team	<b>Day duty</b>	<b>Day duty</b>	<b>Day duty</b>	Day off	On call	On call	On call
Black team	Day off	On call	On call	<b>Day duty</b>	<b>Day duty</b>	<b>Day duty</b>	<b>Day duty</b>
<b>Week 2</b>	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Blue team	<b>Day duty</b>	<b>Day duty</b>	<b>Day duty</b>	<b>Day duty</b>	Day off	On call	On call
Black team	Day off	On call	On call	On call	<b>Day duty</b>	<b>Day duty</b>	<b>Day duty</b>

## Actions

- As proposed by Cordice (2000), prepare a TCMP staff handbook giving full details of the responsibilities of each staff member, their eligibility for specific training courses, and the procedures to be followed in carrying out their jobs.
- Given the special role of the rangers, and their responsibilities for enforcement, some consideration is needed on the protection to be given to the rangers in their job. Support may be available under their positions as public service government employees, or additional insurance cover may be required.

## 20.2 Monitoring assistants and internships

The Cordice 1998 management plan proposed the recruitment of a number of local persons to assist in the monitoring and protection of the park and in the education of users. This proposal is not included in the present plan as a formalised arrangement. Knowledgeable local persons would however be encouraged on an informal basis to educate park users, promote compliance with rules and report any infringements to the park staff.

Cordice (1998) also proposed an internship programme for the park, whereby students would work with park staff for 2 months on a range of practical experiences, e.g. including scientific monitoring, patrolling, park maintenance, administration and report writing. Such interns could be taken after their A-level studies or as recent graduates depending on the type of support needed at that time. Interns would not receive a salary, but the park would cover basic costs such as travel or accommodation as approved by the management committee / board.

## 20.3 Training

Training requirements for the TCMP were identified by IJA (2004d) as given in Table 7. Cordice (2003) also emphasised the need for training in 'emergency readiness', including both marine rescue and self defence. Espeut (2006) advised that the TCMP staff "*would benefit from training in the environmental laws of SVG, the specific regulations of the TCMP, in how to take statements from witnesses, how to caution accused persons, how to make an arrest, how to preserve physical evidence, how to give evidence in court, in conflict resolution, in environmental education techniques, in water quality analysis, etc*".

**Table 7. TCMP training requirements given by IJA (2004d).**

Staff	Type Training	Training and/or Certification Institution
Boat Captains	Boat captain	Coast Guard
Dinghy Operators	Dinghy operation	Coast Guard
Rangers	First aid and CPR	Red Cross
	Lifeguard services (diving and swimming)	Coast Guard in association with PADI / NAUI or similar agency certified instructor
	Security	Police Department in association with local security firm
Visitor Centre Receptionist	Hospitality / customer care	Ministry of Tourism in association with a 1 week attachment at a hotel

In preparing a 'Site Consolidation Scorecard' with TNC in June 2005, park staff identified the following training needs for TCMP staff.

- First Aid
- Safety at sea
- Customer Service/Public Relations
- Basic concepts of marine biology/ecosystems
- Wildlife management
- Marine Protected Area/National Park Management
- Management
- Background/history of Tobago Cays
- Biological damage assessment
- Conflict resolution
- Communication skills
- Scuba certification
- Navigation, seamanship training
- Boat maintenance/repair
- Basic computer skills
- Literacy and writing skills
- Exchange and attachment with other park(s)

More recently, the OPAAL project has undertaken a training needs assessment for SVG and the other project countries (Parsram, 2007). Training needs were identified for different target groups as given in Table 8 below. Since the first draft of this plan, many of the training needs identified for the TCMP have been incorporated into a 'Sustainable Livelihoods' subproject prepared by park staff and collaborating stakeholders for OPAAL funding (see Section 16.2, and items listed in Table 8 below). Although some elements of this project would include park staff in training activities, the focus is mainly on supporting local resource users in developing sustainable livelihoods in and around the park, and their capacity to participate in park management. The October 2007 workshop proposed that a second suite of training activities should be developed to specifically assist the park staff and the Marine Parks Board in developing the institutional arrangements for the park (as described in 11.2). As listed in Table 8, capacity would be built in these training elements in the areas of co-management and community outreach. The project would also assist the park in developing skills in site operations and operational planning. Support is also required in the further development of the monitoring programme for the park, and in quantifying the baseline status of the park (see Section 23). These training needs could be supported by OPAAL budget line 201.2.2.3 and OPAAL Component 3. In addition to these elements, a detailed training plan needs to be prepared, particularly relating to long term training needs which are needed on a recurring basis due to the turnover of park staff (e.g. first aid, safety and security, conflict resolution etc).

**Table 8. Training needs relating to the TCMP, as proposed by the OPAAL Training Needs Assessment (Parsram, 2007).** Updates made to this table during the October 2007 revision of this plan show the training aspects already covered by the EU Tourism project, the training already provided (by OPAAL, the TCMP or others), and training aspects covered (either fully or partially) in the Sustainable Livelihoods subproject (see Section 16.2), marked 'OPAAL – SL project'. Other training needs identified as priorities by the October 2007 workshop to assist in the establishment of the TCMP are earmarked for OPAAL funding as 'OPAAL – TCMP development'.

<b><i>National level training needs</i></b>
---

- Policy analysis, development and Implementation ..... Covered by EU Tourism Project
- Technical writing and report structures
- Change management
- Proposal writing ..... Provided already by OPAAL
- Strategic planning
- Co-management
- Stakeholder analysis
- Facilitation skills
- Protected areas regulation for protection and enforcement
- Conflict resolution, mediation and negotiation techniques
- Information technology
- Financial management
- Tourism policy and planning
- Tourism and sustainable livelihoods management
- Education, awareness and outreach strategies and tools
- Communications
- Protected areas financing options/ resource mobilization
- Business plan development
- Identifying and building partnerships; networking techniques
- Project monitoring and evaluation
- Site operations and management
- Community outreach and management
- Integrated conservation and development planning
- Participatory processes
- Protected areas planning methods and management plan development
- Enforcement
- Project management.

***TCMP level training needs***

- Business Planning..... OPAAL – SL project
- Co-management ..... OPAAL – TCMP development
- Project monitoring and evaluation..... OPAAL – TCMP development
- Community outreach and management ..... OPAAL – SL project and TCMP development
- Technical writing ..... OPAAL – SL project
- Conflict resolution ..... OPAAL – SL project
- Site operations and management ..... OPAAL – TCMP development
- Marketing ..... OPAAL – SL project
- Financial management ..... OPAAL – SL project
- Team building ..... OPAAL – SL project
- Organizational management and leadership ..... OPAAL – SL project
- Board and senior management relationship and effectiveness ..... OPAAL – TCMP development
- Operational Planning ..... OPAAL – TCMP development
- Protocol and diplomacy
- Legislation (awaiting national level elements to be covered by EU Tourism project)
- Enforcement ..... Training provided already by Coastguard
- Conservation ..... OPAAL – SL project

***Associated livelihoods training needs:***

- Business management ..... OPAAL – SL project
- Conflict Management ..... OPAAL – SL project
- Food Safety (Standards, equipment, etc) ..... Covered already by TCMP initiative

• Collaboration and Partnerships	
• Marketing .....	OPAAL – SL project
• Customer relations .....	OPAAL – SL project
• Tour guiding .....	OPAAL – SL project
• Conservation .....	OPAAL – SL project
• Administration and Accounting systems .....	OPAAL – SL project
• Boat building and sailing for youth	
• Boating and fishing gear and equipment operation and maintenance	
• Fundraising options, Resource Mobilization .....	OPAAL – SL project
• Event management training	
• Information technology	
• Communications .....	OPAAL – SL project
• Safety and survival at sea.....	Covered already by TCMP initiative

Recommendations were provided by Parsram (2007) on the preferred formats for different training elements as given in below.

**Table 9. Preferred methods of training delivery for different stakeholder groups, as identified by Parsram (2007).**

Target groups	Potential methods of training delivery
National agencies	Distance learning, short courses, workshops, attachments
Site management staff	Attachments, inhouse training, workshops, apprenticeships
Resource users (training in sustainable livelihoods)	Evening classes, short courses, on-site training

**Actions**

- Design and implement a programme of training activities to support the TCMP in developing the proposed participatory institutional structure, and in building capacity for park operations and operational planning.
- Prepare training plan for TCMP staff and other stakeholders, guided by recommendations of OPAAL Training Needs Assessment.
- Begin implementation of training plan.

**20.4 Infrastructure and equipment**

The TCMP currently has a permanent park office building, comprising a reception room, three office rooms, one store room, and toilet and shower facilities (see Figure 13). This ‘HQ’ is located beside the public square at the pier head in Clifton, Union Island, and was constructed with French development funding in 2004. There is no current control post or station within the actual Cays. The park also owns three boats and various engines, all old and requiring frequent mechanical attention (Figure 14). The current needs of the park are summarized in the following sub-sections.



**Figure 13. The new TCMP office in Clifton, Union Island.**



**Figure 14. One of the current TCMP patrol boats, hauled out at Clifton.**

### **Boats**

To effectively achieve its duties, the park requires at least two vessels (ECLAC, 2002; IJA, 2004c). The larger of these two vessels would be used for transporting workers, supplies and equipment between Union Island, Mayreau and the park. A smaller vessel would be used for routine patrolling within the park, collecting entry fees and mooring fees. The latter vessel should either be an inflatable or be sufficiently well fendered to go alongside yachts without causing damage. Specifications for the two vessels are given in Box 11.

#### **Box 11. Specifications of the two proposed TCMP vessels (IJA, 2004c).**

##### **Worker Transport Vessel**

- Seating capacity for the minimum of ten (10) persons, so that research and other workers not normally stationed at the outpost can be accommodated on demand
- Cover to protect against rain
- Diesel engine for fuel economy
- Navigation lights for night use
- Life rings to aide persons accidentally falling overboard
- Life vest for 12 persons
- GPS for navigation
- VHF radio
- Spotlight

##### **Fee Collection Tender**

- Rigid inflatable or well-fendered hard dinghy (around 14ft length)
- 25 HP engine
- Spare engine (to be stored at Ranger outpost)
- Oars for use in breakdowns
- Navigation lights for night use
- Accompanying portable spot lights
- Steering wheel

### **Ranger outpost station**

A permanent ranger outpost station is required within the Tobago Cays both to provide a base and facilities for the staff, and a location for yachts to report their arrival into the park and to pick up leaflets etc. Previous plans have considered using either a custom made live-on-board

facility or alternatively an onshore facility built on one of the park islands. The preference in this plan is for an anchored vessel, possibly an old catamaran, to be converted for this purpose. The vessel would need to be equipped with holding tanks, and be able to get underway and go outside of the park to pump them out when necessary. Specifications for the proposed facility are given in Box 12.

**Box 12. Specifications of the proposed ranger outpost station (IJA, 2004c).**

- Sleeping quarters for 4 persons
- Toilet (head) and shower
- Kitchenette or galley, with refrigerator and stove
- Water storage facility (onboard tank or on-land tank)
- Garbage storage facility
- Holding tanks
- Storage space for scuba gear, life vests, spare anchor, monitoring equipment & supplies,
- Energy supply system (preferable a wind generator and solar panels with storage batteries, allowing use of the main engine and generator as a backup system)
- Dockage for tenders, including own fee collection tender
- Maintenance quarters
- First aid kit and supplies
- VHF radio
- Stretchers (2)

***Other equipment***

Other equipment requirements were listed by park staff in 2005 (TNC, 2005), as given below <sup>5</sup>.

- VHF Radios (3)
- Mobile radios (walky talkies) (5-6)
- Cellular phones (1-2)
- Audiovisual equipment: digital camera, video camera, underwater housing, projector
- Computers (2)
- Photocopier
- Furniture: for visitor centre (chalkboard, flip chart, table, chairs); for office: 4 filing cabinets
- Kitchen equipment: for ranger outpost station (1 set); for office: fridge
- Security equipment: hurricane shutters, fire extinguishers, first aid kit, O<sub>2</sub> unit.
- Field equipment: cutlass, leatherman, rain cloaks, flashlights, life jackets, life saver
- Uniforms (12 sets, two per ranger)
- Dive equipment (assuming tanks rented for each dive): 2 octopus regulator sets; 2 BCs (additional dive equipment suggested by Sophie Punnet, Fisheries Division: dive belt and lead weights; wrist compass and dive computer; underwater slates, dive bag, fins, snorkel, masks etc. Presume some of this already owned and still serviceable. Staff to confirm needs.)

---

<sup>5</sup> Note that this list does not include the communications materials and mooring buoys covered elsewhere in the plan.



## 21. Financial arrangements

### 21.1 Business plan

Since its formation, the TCMP has been largely supported by an annual subvention from the SVG government. To reduce this burden on government, most previous management plans have proposed that the TCMP should become a self-financing, non-profit organization, managing its own financial income and costs through its own bank accounts. Although detailed financial analysis is still required, it is believed that the park should be able to cover most of its costs, like other similar parks, by income from user fees and other sources.

A comprehensive business plan is required for the park. This should be prepared once the basic structure and activities of the park have been agreed with the adoption of this management plan. Provisional estimates for many of the figures for such a business plan are given in the following sub-sections. Detailed plans should be developed using a comprehensive financial planning system, such as the worksheets given by The Nature Conservancy (2001a). Useful simple guidance on financial planning for marine protected areas is also provided by Kelleher (1999).

### 21.2 Income and expenses

#### 21.2.1 Salaries and operating expenses

Estimates of annual operating expenses have been included in most of the previous TCMP management plans. The figures given in different documents vary significantly, both in terms of what is included, and in the costs of different items.

Estimates of annual staff salary costs range between \$135,600 (Cordice, 1998) and \$308,787 (MEDO, 2003). Current estimates, based on salary rates provided by the TCMP manager in 2006 and assuming the employment of six rangers, are given in Table 10 as \$270,340. It is possible that higher salaries may be needed (i.e. at a regionally competitive level) to recruit the best qualified staff for the senior positions. Developing the capacity of staff in these positions would reduce the park's dependence on the board and the proposed Management Committee.

Current estimates of other operating expenses are similarly given in Table 10 as \$310,224. Estimates in previous plans have varied between \$33,992 (in a draft budget prepared by the Ministry of Finance, 2005) and \$291,000 (in Cordice, 1998). Cordice's high figure in the first TCMP management plan included \$108,000 for fuel, \$30,000 for publications, \$18,000 for buoy maintenance, and \$39,000 for depreciation costs. Most of these items are much reduced in the current estimates, but a higher figure has been included for depreciation to reflect the boats and other equipment now required in the plan. Annual operating expenses for publications take account of the capital inputs provided in the forthcoming years by OPAAL.

Total annual operating costs are currently estimated at \$580,564.

**Table 10. Estimated current annual operating costs (all figures in EC\$).**

Staff	EC\$
Park Manager	48,000
Park warden	24,000
Park rangers (6)	74,826
Natural resources officer / Marine biologist	32,412

Management assistant	21,816
Accounting assistant	18,216
Education coordinator	32,412
Office attendant	9,516
Benefits (3.5% park contribution to National Insurance)	9,142
Total staff	270,340
<b>Operating Expenses</b>	
Fuel	51,744
Boat operation & maintenance	24,000
Office equipment & stationeries	3,600
Field safety equipment	5,000
Uniforms	4,680
Publications and promotions	6,000
Supplies and material	6,000
Utilities (electric)	5,000
Communications (phone + website)	12,000
Travelling & subsistence	30,000
Staff training	18,000
Monitoring	4,800
Board expenses	9,600
Buoy maintenance	5,000
Facility maintenance etc	10,000
Insurance (patrol boats, staff disability / compensation etc)	10,000
Depreciation	100,000
Miscellaneous / sundry expenses	4,800
Total (operating expenses)	310,224
<b>Total</b>	<b>580,564</b>

#### Notes

- Fuel cost assumes full operation for 2 boats, increased to reflect recent fuel price increases.
- Increased communications cost includes some for hosting web site.
- Uniforms: Based on quoted estimate of \$2,900 for three sets of uniforms for 4 rangers (3 pants, 3 tops, 2 shoes, 2 caps, 3 socks), raised x1.5 for 6 rangers.
- Estimate of communications costs only for publication of leaflet, not design etc.
- Travel and subsistence costs covers regular travel as required up to St Vincent for meetings etc.
- Board expenses increased, now \$500/month for chairman and \$100/month for others (previously \$300 and \$50).
- SVG National Insurance – 2.5% personal + 3.5% paid by park as employer.

#### 21.2.2 Capital and other expenses

The capital expenses listed in current park budgets are given in Table 11. Exact requirements will depend on the details approved in various other parts of this plan (e.g. for numbers of moorings, communication plan etc). The items listed in Table 11 include lines for some items given in previous plans, and the requirements listed by TNC (2005), based on staff proposals.

**Table 11. Estimated current capital and other costs including funding allocations from external project as agreed at October 2007 (see following section) (all figures in EC\$).**

<b>Capital costs</b>	<b>External funding allocations</b>	<b>EC\$</b>
Yacht moorings	\$100,000 - OPAAL budget 201.2.2.1	100,000
Dinghy moorings	\$25,000 - OPAAL budget 201.2.2.1	25,000
Marker buoys (costs will depend on number of conservation exclusion zones identified)		10,000
Patrol boat 1 (27ft transport vessel)	\$307,000 - OPAAL budget 201.2.2.2	345,000

Patrol boat 2 (25ft transport vessel)		81,000
Patrol boat / fee collection tender (14ft inflatable)		10,800
Ranger outpost station (moored vessel)	\$497,800 - EU Tourism project	500,000
Welcome centre / booth (interpretation centre)	\$162,000 - OPAAL budget 201.2.2.1	170,000
Interpretation exhibits for welcome centre	\$15,000 - OPAAL budget 201.2.2.1	20,000
Furniture for visitor centre (chalkboard, flip chart, table, chairs; for office: 4 filing cabinets)	\$5,000 - OPAAL budget 201.2.2.1	12,000
Construction of VIP toilet on Petit Bateau		15,000
Communication equipment (3 VHF radios, 5-6 walky talkies; 2 cell phones)		10,000
Field equipment: diving gear, four sets		13,500
Field equipment: cutlass, leatherman, rain cloaks, flashlights, life jackets, life saver		10,000
Medical equipment: first aid kits, office and field		1,500
Kitchen equipment: for ranger outpost station (1 set); for office, fridge		2,500
Security equipment: hurricane shutters, fire extinguishers,		5,000
General equipment (computers, cameras, projector, scientific equipment)		15,000
Photocopier		3,000
Uniforms (initial stock)		9,360
Communication materials (signs, posters, leaflets, handbook etc)	\$20,000 - OPAAL budget 201.2.2.1	20,000
<b>Other costs</b>		
Repairs to existing field equipment		2,500
Repairs and renovation of office building		4,000
Repairs to office equipment and furnishings		3,000
Ticketing and accounting system		5,000
Research surveys and studies (various, to be agreed, e.g. based on research plan)		[???
International travel		6,000
Education, public awareness activities etc		3,000
<b>Total costs</b>	<b>Total allocations from OPAAL and EU projects: \$1,131,800</b>	<b>\$1,402,160</b>

Notes:

- Dive gear costs estimated by Fisheries Division, based on four sets of gear
- Research costs to be clarified based on research plan, some costs covered by Fisheries Div. etc
- The budget above (as updated in October 2007) includes a second patrol boat as a second-hand vessel was purchased by the park in 2007 to enable patrolling to commence prior to the arrival of the OPAAL-funded vessel.

### 21.2.3 Park income

The TCMP was initially supported by a government subvention. The annual allowance has been reduced in recent years from EC\$ 350,000 in 2004 to \$200,000 in 2005 and \$150,000 in 2006. With the staff levels adopted in recent years, the subventions have just about covered staff costs, leaving inadequate funds for fuel for patrols or for boat maintenance etc. Delays in the receipt of payments have caused further problems (Cordice, 2003).

In future, the government's intention is reportedly to reduce the subvention to zero as the park moves towards a self-sustained operation. In order to become self-financing, the TCMP proposes to raise revenue from three main sources:

- user fees, including entry fees, mooring fees, commercial operators licenses and other permits as described in Section 15;
- donations and special projects, particularly covering capital costs, capacity building etc; and
- sales of TCMP souvenirs and merchandise.

With these income sources, it is hoped that the park will eventually be able to build up a reserve (e.g. to be placed in a trust fund) which could cover any future shortfalls caused by fluctuations in income between years.

### **User fees**

Park income from entry fees, licenses and permits has been variously estimated in previous plans as between \$273,500 (Cordice, 2003) and \$1,020,828 (Ministry of Finance 2005 draft budget). The large differences between these estimates are partly due to the different fee structures proposed in different plans (e.g. per-person versus per-vessel fees), partly to the different rates proposed at different times, and partly to variation in the estimated numbers of park visitors. The first two of these factors can now be fixed as given in Box 3, but the number of visitors that the park should expect is still largely uncertain.

The Ministry of Finance 2005 budget assumes that the park will receive 74,927 visitors per year, i.e. an average of 205 per day, ignoring seasonal variation. Other plans suggest lower numbers, but very few of the plans have a clear explanation for the derivation of their figures (with the notable exception of Heyman et al, 1988, who estimated 33-37,000 visitors per year, and 44-48,000 visitor days). Most financial projections do not take account of any reduction in the numbers of visitors to the park following the introduction of the park entry fees, even though this must be assumed given the \$10 daily fee adopted<sup>6</sup>. The most recent estimates of park visitors provided by park staff, and adjusted for the expected numbers of cruise liner visitors in Table 3, are given in Table 12 below. Based on these provisional figures, the park may expect to raise up to \$600,000 from user fees, most of this from entry fees, with limited additions from moorings income (once they are installed) and from the commercial operators' licenses. If the number of yacht visitors proves to be significantly higher than used in this forecast, as suggested in some previous studies (and see footnote to Table 12), the park income from entry fees would of course be much greater.

**Table 12. Estimated income from user fees as proposed in Box 3.**

<b>Fee category</b>	<b>Duration / units</b>	<b>Rates (EC\$)</b>	<b>Estimated No. / yr</b>	<b>Projected Income</b>
<b>Moorings</b>				
Yachts, 40ft and under	Per yacht per day (24 hrs)	40	* 100	4,000
Yachts, 41 ft-70 ft	Per yacht per day (24 hrs)	50	* 100	5,000
Yachts, 71 ft-100 ft	Per yacht per day (24 hrs)	60		0
Dinghy Moorings **	Per yacht per day (24 hrs)	15		0?
Dive Moorings **	Per yacht per day (24 hrs)	10		0?
Total mooring fees			* 200	9,000
<b>Entrance Fees</b>				
Yacht passengers ***	Per person per day (24 hrs)	10	20,880	208,800
Cruise ship passengers ****	Per person per day (24 hrs)	10	21,290	212,900
Scuba Divers	Per person per day (24 hrs)	10	1,440	14,400
Day tours	Per person per day (24 hrs)	10	12,400	124,000
Local excursions	Per person per day (24 hrs)	2	1,000	2,000
Total entrance fees			57,010	562,100

<sup>6</sup> A 1995 willingness to pay study by the French project (quoted in MEDO, 2003) found that 87% of those surveyed would be willing to pay US\$5 per boat per week. For most visitors, this would work out significantly less than the now introduced EC\$ 10 per person per day, especially for longer visits.

<b>Commercial operators licenses</b>				
Vendor licence	Per year	200	20	4,000
Water taxi licence	Per year	300	40	12,000
Charter boat licence	Per year	400	4	1,600
Scuba licence	Per year	800	4	3,200
Total comm. operators fees			70	21,800
<b>Other income</b>				
Filming permits	Per permit	300	2	600
Wedding permits	Per permit	300	2	600
<b>Total income (from fees)</b>				593,100

- Notes: \* A rough guess, assuming only limited moorings placed, as proposed in Section 13.1.4.  
 \*\* Included in user fees, but presume no charge to be made  
 \*\*\* At the 2007 consultations, Ms Mary Barnard of the Barefoot Yacht Charters company suggested that the number of yacht visitors used in this table may be 'very much on the low side'. Based on that company's experience and on the reports of their charterers, Ms Barnard estimated that the TCMP may receive 89,645 yacht visitors per year (estimated as 5,475 yachts under 40ft visiting the Cays each year, each carrying an average of 3 persons; plus 8,670 yachts in the 41-70ft class, each carrying 6 persons; and 2,650 yachts over 71ft, each carrying 8 persons).  
 \*\*\*\* Numbers as estimated by Jean Marc Saily, Wind & Sea (see Table 3).

### **Capital financing – donations and projects etc**

Many marine parks benefit from grants and donations that are usually applied to 'special projects' and capital costs. These can be valuable sources of income, but require time and expertise in the preparation of successful applications. Several of the activities and costs outlined in this TCMP management plan will be supported by two major development projects, as described below.

Funding is allocated under the GEF-funded OPAAL project to support the following TCMP needs:

Worker transport boat	OPAAL Budget line 201.2.2.2 .... (US\$115,000).....	\$307,000
Baseline monitoring	201.3.1.2 ..... (US\$14,583).....	\$39,193
Communication planning and materials	203.1.1 ..... (US\$5,200).....	\$13,975
Preparation of this management plan	201.2.1.1 ..... (US\$20,000).....	\$53,752
Dissemination / publication of management plan	201.2.1.2 ..... (US\$2,500).....	\$6,719
Statistics reports and publications	201.3.1.3 ..... (US\$3,267).....	\$8,780
Infrastructure	201.2.2.1 .... (US\$122,833).....	\$330,111
Technical assistance and training	201.2.2.3 ..... (US\$66,667).....	\$179,166
New sust. livelihoods - local site consultations	202.1.2 ..... (US\$2,100).....	\$5,644
New sust. livelihoods - local technical support	202.1.3 ..... (US\$5,250).....	\$14,110
Alternative livelihood subprojects	202.2.1 .... (US\$108,333).....	\$291,155

The EU-funded € 5.74m Tourism Development Project, now starting in 2007, will also support development needs in both the TCMP and the fort in Union Island. According to IJA (2004c), a budget of \$497,800 is provisionally allocated to the TCMP under this project.. By the time of this October 2007 revision of the plan, it had been agreed with EU that this budget would be fully allocated to the costs of the ranger outpost station (or 'base boat').

Capital cost items earmarked for support by the OPAAL and Tourism Development projects, as given in the above budgets are identified in Table 11. Other plan elements identified by the 11

October 2007 workshop for OPAAL workshop include the livelihoods subprojects identified in Sections 16.2 and 20.3.

For the future, other funding may be available from conservation NGOs or development agencies especially those that have a history of previous involvement in the Grenadines (e.g. TNC, GEF). Detailed fund-raising guidelines, including the advantages and disadvantages of alternative revenue generating mechanisms, and the prospects of support from different international donors, are given by WCPA and IUCN (2000), and The Nature Conservancy (2001b).

### ***Souvenir Sales***

Once the park is better established, it may also develop an income from the sale of souvenir items and other park related merchandise. This may include site maps and dive guides, and souvenirs, such as videos, 'dive tokens' to stick on dive gear, T-shirts, caps, postcards and logo pins etc. All such items should be related to the marine park or to marine conservation in general. Such materials should only be expected to provide a small percentage of total revenue required, but may nevertheless be useful.

## **21.3 Financial management**

Section 19 of the 1998 Marine Parks (Tobago Cays) Regulations requires the Marine Parks Board to keep 'proper books of accounts in a manner consistent with approved accounting principles'. Such accounts are to be audited within two months after the end of the financial year, by an auditor approved by the Minister, and submitted to Cabinet for review by the House of Assembly. Such requirements should be extended to the TCMP Management Committee and to the park itself, as proposed below.

### ***Forecasting and reporting***

Cash flows, revenues and expenditures, shall be reported and forecast by the Finance Committee of the TCMP Management Committee, assisted by the park manager and an accountant to be assigned. Internal financial statements will be prepared on a quarterly basis for reporting to the Committee at the quarterly meetings.

Financial plans for each forthcoming year will be presented to the Board for approval at the quarterly meeting before each AGM. These will be based on work programs derived from the TCMP objectives by the Board in advance of the meeting. Once agreed, the work programs and budget shall then be submitted to the Minister of Agriculture, through the Fisheries Division for adoption or comment. Final yearly programs and budgets for the year will then be presented to the public, along with the last year's audited accounts, at the park's AGM.

### ***Management of income and expenditures***

All user fees raised by the park shall be paid into the TCMP bank account for use in the management of the park, and not returned to any general government fund.

All cheques and cash exchanges shall be made against receipts, to be numbered and filed the TCMP office in Union Island. Bookkeeping will be maintained on a computerised accounting package, to facilitate off-site storage of financial data backups.

Petty cash will be kept at the TCMP office only, in a locked safe box, up to a maximum of \$1,100. Any income from user fees and merchandise sales will be returned to the office each night. Cash income and cheques will be banked either weekly or whenever the cash income has exceeded \$1,000. A float of \$100 shall be retained in the safe box. Park entry fees collected by commercial operators on behalf of the park will be remittable to the TCMP only as cheques.

### ***Accounting and banking arrangements***

The TCMP's accounts shall be reconciled and kept up to date on a monthly basis. Annual financial statements will be audited prior to submission to the Minister before each AGM.

### ***Internal financial management***

Revenues collected by the TCMP shall be used to pay its staff and meet the day-to-day expenditure incurred by the organization. Funds raised for specific projects will be kept in separate accounts, and used only to finance the planned programs and activities.

Any excess revenues collected by the TCMP over and above its current administrative and programmatic needs will be carried over to following year and used as guided by the board to improve the management of the park. In the case of revenue shortfalls, efforts will be made to cut costs as needed. The order in which expenses shall be cut will be decided by the TCMP Management Board.

### ***Actions***

- On finalisation of this management plan, prepare a full business plan including estimates of the different income streams to the TCMP, and the capital and operating expenses associated with different park activities.
- Having agreed the organisational structure for the TCMP (Section 11.2), install a financial management structure for record keeping and accounting, based on Section 21.3.
- Once the park operations are fully established, develop TCMP merchandise for sale at the Clifton office and elsewhere.

## **22. Surveillance and enforcement**

The TCMP experiences significant problems with illegal fishing; with yachts and dinghies anchoring in inappropriate locations too close to coral reefs; with people leaving garbage and litter on the beaches or throwing it overboard; with water taxis breaking the speed limit; and with various other rule infringements. Many of the turtles in the lagoon were recently captured by a single night of illegal netting. Visiting yachts have had their dinghies stolen at night. The rangers do attempt to enforce regulations, but in recent times have been limited by problems with their boats and with inadequate government funding to buy fuel for patrolling. Park staff estimate that there may be as many as 40-60 infringements of the park regulations each week during the high tourist season (Pena, 2006). Better enforcement is now needed both to resolve

these concerns and to ensure that the entry fee rules re-introduced in December 2006 are fully applied to all park users.

In future, it is hoped that the income from user fees will cover the fuel and staff costs required for improved patrolling. This plan also emphasises preventative law enforcement approaches, including strong communication and educational programmes, as outlined in Section 18. While the park staff must be empowered to enforce the park rules, they should be seen by the public as friendly educators rather than authoritarian policemen (Heyman et al, 1988).

## **22.1 Offences and penalties**

Article 6.(3) of the Marine Parks Act (No. 9 of 1997) allows for a fine not exceeding \$5,000 and/or a term of imprisonment not exceeding one year for any person committing the following offences while in a marine park:

- fishing in the sea forming part of the marine park;
- removing any object from the marine park;
- removing or damaging any facility or equipment including buoys;
- damaging or impairing the growth of any flora or fauna;
- by any negligent act or omission damaging the substrata or causing pollution of the air or the sea;
- carrying on any commercial activities except in an area designated for this purpose; or
- any other act which is prohibited by the Act or Regulations.

In cases where equipment has been removed or damaged, the culprit shall also be liable for its replacement or repair. According to Article 6.(4) of the Regulations, any person in breach of the rules against commercial activities shall in addition to the prescribed penalty be liable to have their articles of trade confiscated.

Article 21 of the Marine Parks (Tobago Cays) Regulations (No. 26. of 1998) further allows for the same fine or imprisonment for any person committing the following offences:

- anchoring, mooring, diving or filming in the TCMP prior to paying the prescribed fees;
- anchoring or mooring a vessel outside an area designated for this purpose;
- carrying out or participating in any activity that could endanger the health or safety of a member of the public;
- keeping or rearing any animals;
- erecting any camp or engaging in camping activities; or
- exceeding a speed of 10 knots per hour while in charge of a vessel within 240 yards or an anchorage or mooring site.

The above regulations give significant enforcement powers. For this plan to be fully effective, each of the regulations proposed under Section 14 also need to be agreed with park stakeholders and the Board, and passed as additional SVG laws that can be enforced.

## **22.2 Authorised officers**

The Marine Parks Board is empowered under Article 5 of the Marine Parks (Tobago Cays) Regulations (No. 26. of 1998) to appoint 'officers' for the purpose of enforcing the regulations relating to marine parks. Such officers are defined in the regulations as including the posts of



park ranger and park warden, and may also include the rangers or any other person proposed by the board.

Authorised officers should be issued with a certificate of appointment, which should be produced as and when required for identification purposes.

### **22.3 Powers of authorised officers**

Section 20 of the 1998 Regulations describes the powers of arrest of the park's authorised officers. Where a person who commits, attempts to commit or is suspected of committing any offence against the park regulations (as listed in Section 22.1), an authorised officer may demand that the person stops committing the offence and require the person to give his or her name and address. If the person refuses to stop, or is suspected of giving a false name and address, the authorised officer may then (and only then) arrest the person without a warrant and deliver him or her to the nearest police station to be charged.

Cordice (2000) recommended that park staff should be further authorised to board any vessels in the park, and to seize any equipment or vessels suspected of having been used in contravention of the park rules. Such powers are included in the 2005 draft Marine Parks Bill, but not in the 1998 Marine Parks Act and Regulations, as currently in force.

The powers of the park officers now need to be extended to enable the rangers to achieve their enforcement function. Some have suggested that law is adequate as is, and that the rangers should just call the police or the coastguard from Union Island to assist when needed. Unfortunately neither the police nor the coastguard in Union Island have their own vessels to provide such assistance. While it is agreed that the rangers should adopt a 'softly softly' approach and promote education over enforcement wherever possible, it is also argued that the rangers should be given their own clear powers of arrest, and be well trained in their application.

### **22.4 Ticketing system**

To improve enforcement in the park, the Cordice (2000) management plan proposes a simple 'ticketing' system to be used by the rangers for minor offences. As described by Cordice, a standard form or ticket could be used with a list of all the park offences, enabling the officer to quickly tick those that apply. Additional fields would be used to enter information on the offender, including the vessel name, port of registration, captain's name and address etc. A carbon copy format could be used to give one copy to the offender while the park staff keep the book copy. Specific fines could be associated with each offence, but some flexibility may be needed to apply different fines in the case of first, second and subsequent offences. Options could be made available for the immediate payment of fines, or for the offender to enter a plea of 'not guilty' and thereby take the case to court. 'Warning' tickets could also be issued where an offence is recorded (perhaps as a first offence) but no fine is issued. Such tickets could be issued independently by the park manager and warden, while the rangers would need a witness signature from a second staff member.

With regard to the setting of fines for offences against park rules, a number of suggestions were made by Ecoengineering (2007) as listed below. Further attention is required to decide which of these should be incorporated into the TCMP system.

- The system must clearly define the “responsible party” when a violation occurs. It may be prudent to define the “responsible party” as the master and/or the owner of the vessel. The “and/or” definition allows the TCMP to levy against either party should the other party prove to be a “man of straw” in the legal sense of that term.
- Court prosecution should not be necessary before fines are levied. However, a clear appeal process must be established for persons who feel that fines are imposed unfairly or without justification.
- Fines should be large enough to act as a deterrent. For example, if the fines for illegal dumping are only slightly larger than the cost of having the garbage collected by the water taxi operators, this would be a disincentive to the use of the water taxis.
- The system of fines should be progressive. Repeat offenders should be fined higher amounts than first-time offenders. This will require the creation and maintenance of a data-base of offenders who have been fined.
- The fines should also be linked to a provision where multiple repeat offenders can be banned from entering the TCMP.
- In the case of flagrant violations (such as the discharge of oily waste), the regulations should allow the TCMP to recover the cost of actual damage to environment assets or the cost of remediation (clean-up measures), in addition to the fine.
- Also in the case of flagrant violations, the regulations should allow the TCMP approach the courts to hold (“arrest”) a vessel against the cost of environmental damage or of environmental remediation.

### **Actions**

- Revise legislation to improve powers of arrest of TCMP authorised officers, e.g. by adopting the 2005 draft Marine Parks Bill.
- Develop simple ticketing system for minor offences defining what offences are covered and what fines shall apply both for first and subsequent offences.

## **23. Monitoring, evaluation and research**

### **Objectives:**

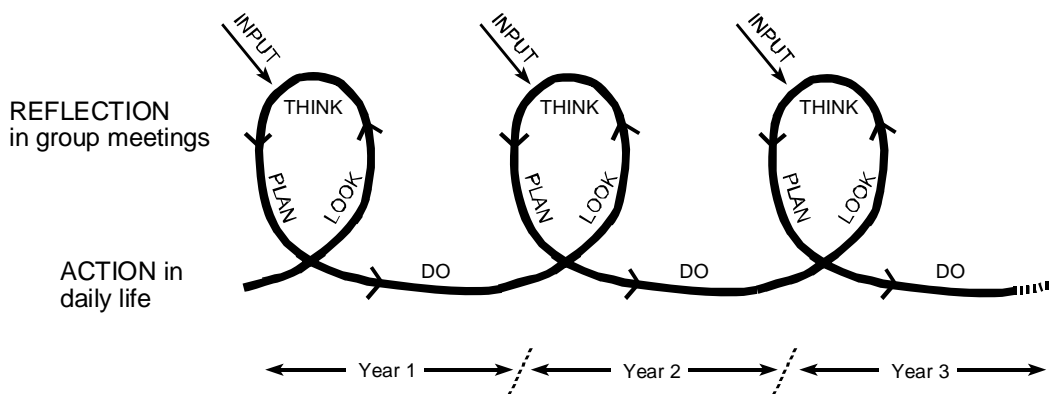
- To provide scientific information on the status of the park’s resources and to guide management actions as necessary to achieve the park objectives.
- To provide an opportunity and a site for tropical marine biological research and monitoring in an area of intensive resource use.

### **23.1 Monitoring and evaluation approach**

The TCMP should be managed according a decision making framework that is based on the core principles of participation, learning and adaptation (Section 2). Under this approach, the TCMP would:

- set management rules designed to achieve the goals and objectives of the TCMP, based on the best available science and local knowledge;
- collect data to determine the outcome of these arrangements each year; and
- where rules are not working, make changes until successful outcomes are achieved.

This approach is illustrated in the ‘action-reflection’ cycle of Figure 15 below. Management rules are thus never fixed, but always on trial. Each year the TCMP will look at the achievements or ‘outcomes’ of the past year, attempt to understand why they occurred, and then plan a new strategy for the forthcoming year, making changes where required. ‘Inputs’ to the evaluation process may include data from monitoring programs, and expert advice from outside the local management team.



**Figure 15. The action-reflection development cycle** (Source: Hope and Timmel, 1984).

This approach recognizes the complexity of biological and social factors affecting the management of a resource and their variability over time. The perfect solution usually can not be predicted in advance. An ‘adaptive management’ approach instead adopts the use of trial periods and feedback mechanisms to find successful solutions. Even these solutions may be changed in future, if conditions change. It is important that local stakeholders understand that such an approach has been adopted, and that they participate meaningfully in the decision-making, monitoring and feedback processes (e.g. by attending TCMP meetings or AGMs).

The monitoring and evaluation system proposed for this adaptive management approach is based on the standard framework proposed by IUCN (Hockings, Stolton and Dudley, 2000). The framework evaluates progress towards the specific objectives defined for the park, but also looks at a range of other factors, including the park design and management processes, that may also affect the outcomes. To guide the management of the TCMP, information should be collected in each of the following categories:

- design issues – i.e. ‘context’ and ‘planning’;
- appropriateness of management systems and methods – i.e. ‘input’ and ‘process’; and
- delivery of protected area objectives – i.e. ‘outputs’ and ‘outcomes’.

For each of these six topics, a series of questions must be asked. Some questions can be answered quantitatively, e.g. from monitoring data on fish catches or coral health (see proposed monitoring indicators given in italics in Annex 1). Other issues must be addressed more subjectively or qualitatively. It is important to undertake a fairly broad analysis each year to determine both the results of management (e.g. the status of the TCMP resources) and the possible reasons why they occur. The ‘outcome’ of management shows whether or not the objectives are being achieved. The various other factors show what might need to be changed when they are not. The needs for management ‘inputs’ cannot be properly judged without

clearly defined objectives and some understanding of the current state of the biological, social and cultural environment. The 'context' and 'planning' issues thus underpin the 'inputs' and 'processes' required.

Assessment results should be used to improve management performance by providing clear recommendations for changes, as and when needed. Monitoring and evaluation must thus be linked to the 'plan' and 'do' stages illustrated in the development cycle above (Figure 15).

### ***What should be monitored and when?***

Proposed indicators for monitoring and evaluation are given in Annex 1, based on the framework of Hockings et al (2000); further background information on the types of indicators that could be monitored may be found in the reference document. Though some indicators could be added or changed over time as required, it is valuable to keep monitoring at least a basic set of indicators that provide comparison with defined baseline conditions.

Monitoring information should be collected and evaluated on an annual basis, and a Monitoring Report produced each year prior to an Annual General Meeting of the park's management committee. In a normal year, the focus should be placed mainly on the input, process, output and outcome indicators as described below. Design issues (context and planning) were considered during this review of the management plan, and should be reviewed again in depth whenever the Plan is updated (i.e. every 3-4 years or more frequently if required). Where specific design issues have clearly changed, they may be included in annual evaluations too.

### ***Who should monitor?***

Evaluations should be led by the TCMP manager, assisted by the other park staff, the members of the local park management committee (see Section 11.2), and external experts as required. Key stakeholders – especially resource users – must also be involved in monitoring and assessments to contribute their expert local knowledge of both the resource and their own situation. Where local people are involved in the data collection and evaluations, they are far more likely to accept and support any management changes proposed for the year ahead. Local dive operators should thus help wherever possible with monitoring corals and other habitats. Stakeholder workshops should be held to answer some of the questions, e.g. about 'context' and 'process'. Such workshops should be structured and facilitated to provide clear answers and avoid personal criticisms. TCMP board members may seek inputs from their constituencies before such workshops. The level of detail should however be kept at the minimum required to detect change - evaluators should never attempt to collect more information than they can effectively utilize. Results from the evaluation should also be presented back to stakeholders at or before the AGM to confirm the findings before conclusions are reached and recommendations made.

## **23.2 Research**

In support of and guided by the above management evaluation program, the TCMP Management Committee (or its standing committee responsible for science and research) shall develop a research plan for the marine park. The TCMP will collaborate with reputable and appropriate bodies to execute research activities as appropriate to each topic, but the selection or rejection of research proposals shall be under the direction of the TCMP as in other marine parks (see e.g. SMMA, 2001). Research information derived by the TCMP may be made

available to schools or other institutions and formatted as required for use as promotional materials and in public education.

One important area of research will be to map the geographical features of the park, including the different habitat types and resources. Valuable information on the status of the TCMP reefs was collected by CCC (2002) (see Section 5.2.3). Further details on the marine resources of the Grenadines and their uses will be generated by the Grenadines Marine Space Use Information System (MarSIS) project, led by CERMES PhD student Kim Baldwin. MarSIS will develop a GIS database with key ecological and socio-economic information for the full marine area around the Grenadine islands. New information is being collected between 2006 and 2009 through participatory action research. The aim is to provide an information base for a marine space use plan that will include a network of protected areas.

### **Actions**

- Taking account of the valuable historical information available in previous Tobago Cays studies and evaluations (e.g. CCC, 2002; Deschamps et al, 2003; FMC and FD, 1995; Heyman et al, 1988; OPAAL, 2006; Pena, 2006; TNC, 2005; Ecoengineering, 2007), and the proposed evaluation framework outlined in Annex 1, identify monitoring methods and indicators to be used in future to evaluate the status of the TCMP resources and identify management actions needed to achieve objectives. Such identification should be take the form of a monitoring and evaluation plan for the park, that would include detailed methodological instructions, and 'baseline' estimates of the various indicators proposed in Annex 1 (and/or others as selected in this activity) for the current year. The preparation of the monitoring and evaluation plan and its implementation for a first year of park operations leading up to a presentation on the park status at an AGM (i.e. the action points below) should be supported by an OPAAL subproject to be funded under budget line 201.2.2.3.
- Provide training and support to the TCMP staff as required to implement the monitoring and evaluation plan.
- Collect data as required under the monitoring and evaluation plan, to estimate adopted indicators using monthly samples, questionnaires or annual surveys as required.
- Park manager in collaboration with science and research committee of the TCMP Management Committee and other experts to evaluate monitoring data on an annual basis, and present full observations from the evaluation framework at each AGM of the park.
- Science and research committee of the TCMP Management Committee to prepare a research plan for the TCMP, e.g. following the template used for the Soufriere Marine Management Area (SMMA, 2001), and taking account of the research needs in this plan (including the water quality and oceanographic studies described in Section 13.1.4).

## 24. Public and stakeholder consultation and involvement in management

In recent years, the TCMP has been criticised by some regarding the limited arrangements in place for stakeholder consultations and involvement in management decision making. Based on his analysis of the current CERMES 'Enhancing Management Effectiveness' project, McConney (2007) reported that "*The TCMP office needs to improve its efforts to hold meetings with stakeholders and begin keeping records of participants, meeting dates and minutes. Greater participation from stakeholders could enhance content, legitimacy and compliance with management measures leading to the increased success of the TCMP.*"

Consultations conducted by the Marine Parks Board in 2005 on the fee system for the park were criticized by local NGO, Friends of the Tobago Cays, as being "*poorly attended due to inadequate promotion and timing*" and lacking professional facilitation (FOTC, 2005). While these criticisms may be valid, it is also notable that the original vessel and moorings-based fee system proposed for the park by the Board was revised to adopt the stakeholder preferences for a simpler per-person charge on the basis of the consultations. In this sense, despite the criticisms, some recognition must be given to the Board's willingness to listen to stakeholders.

Any protected area that is managed for the joint objectives of conservation and local livelihoods must take into account the needs of local resource users. Solutions developed in partnership with resource users are more likely to be well adapted to the local area, and more likely to be accepted by those users, than 'top-down' schemes that simply aim to suppress 'undesirable' activities. Local or 'traditional' knowledge can also provide valuable inputs to the design of the system, e.g. on the locations of the most valuable habitats, and any negative impacts taking place.

Involvement of the public and other stakeholders in the management of the TCMP is primarily promoted under this plan by the formation of a management board or committee to be elected or appointed by local people (see Section 11.2). The members of such body would be directly involved in the monitoring and evaluation activities of Section 23, that would themselves guide management decisions, including proposals for new regulations or revised zonation of the park. It is hoped that local stakeholders elected on to the board would further assist the park staff in their public education and awareness raising activities. All persons licensed as commercial operators within the TCMP should help staff by quickly reporting any illegal activities that they observe in the park. It is hoped that stakeholders' capacity for these roles will be developed in part by the sustainable livelihoods subprojects to be funded by OPAAL as described in Section 16.2.

## 25. Management plan review process

This management plan covers a nominal three year period, 2007-2009. It is not yet, however, sufficiently developed to itemise all of the detailed activities that may occur within that period. It has also been prepared at a time of national changes in the management of protected areas in SVG (see Section 7) and at a time when the needs of the TCMP are being gradually addressed by its inclusion as the SVG national site for the OECS OPAAL project. Other OPAAL sub-projects will thus develop the communications, training and monitoring sections of this plan over the forthcoming months. Noting these expectations and the various other gaps in the document, interim versions of the plan may be produced during this initial period.

In addition to any OPAAL-related interim updates, this plan should be fully revised in three years' time, around the end of 2009, based on a complete park evaluation using the indicators and framework proposed in Section 23. A checklist of the main 'action points' required by the plan is also given in Table 13. The achievement of these actions should be monitored over time, and updated for the next version of the plan.

It is not clear at this stage exactly what process is required for a marine park management plan to be reviewed or formally adopted in SVG. The current 1997 Marine Parks Act and the 1998 Regulations do not cover management plans. The 2005 draft Marine Parks Bill proposes that management plans for individual parks should be drawn up by the new Marine Parks Authority, not by the local park managers (see Sections 5 and 20 of the draft Bill), but notes that the Authority may delegate such function to "any of its management committees, members, officers or agents" (see Section 5.(2) of the draft Bill).

Assuming that a TCMP local management board or committee will be formed in the near future, any future plans should be first drafted by this body in collaboration with key members of the national Board or Authority. The draft should then be presented at an AGM of the TCMP 'Community Council' to receive inputs from local stakeholders. After any revisions, it may then be submitted for review by the national Marine Parks Board / Authority. Further review may be required by the Minister responsible for marine parks (currently the Minister of Agriculture and Lands), and the Minister responsible for national parks (currently the Minister of Tourism), and Cabinet.

### Actions

- Process required for formal review and adoption of this and future versions of the TCMP management plan to be advised and legislated (e.g. as part of a revised Marine Parks Act, based on the 2005 draft Marine Parks Bill).

**Table 13. Checklist of main action points required under this 2007-2009 plan, and the proposed implementation years. Items proposed for OPAAL financial support are marked 'O'.**

Section	Action (see section for full details)	2007	2008	2009
9/10	• Review mission statement, goals and objectives.	✓		
11.1	• Finalise national arrangements for management of marine parks.	✓		
11.2	• Remove Tobago Cays' designation as a fisheries 'conservation area' as guided by national system plan. • Develop organisational structure for park to include a TCMP Management Committee as proposed.	✓ ✓ O		
12	• Gazette park boundary, as approved by cabinet.	✓		
13.1.4	• Estimate social carrying capacity of park. • Investigate pollution impacts of park users and estimate ecological capacity of park.		✓ ✓	
13.1.6	• Determine positions of conservation exclusion zones. • Update plan to give reasons for each exclusion zone.		✓ O ✓ O	
13	• Gazette zonation plan, as proposed. • Mark zone locations using signs and/or marker buoys	✓ ✓ O		
14	• Gazette new regulations, and modify existing, as proposed.	✓		

15	<ul style="list-style-type: none"> <li>Develop computer database system for user fees.</li> <li>Acquire credit card merchant account for payment of user fees.</li> <li>Undertake 'willingness to pay' study re park entry fees.</li> </ul>	✓ ✓	✓	✓
16.1	<ul style="list-style-type: none"> <li>Update legislation on licenses and permits.</li> <li>Discuss and agree optimal numbers of each type of commercial operators license with stakeholders.</li> <li>Discuss and agree criteria for licenses and permits.</li> </ul>	✓	✓ ✓	
16.2	<ul style="list-style-type: none"> <li>Design and implement sustainable livelihoods support initiatives including at least two OPAAL-funded 'livelihoods subprojects'.</li> </ul>	✓ O	✓ O	
17.1	<ul style="list-style-type: none"> <li>Survey park's land-based natural resources.</li> </ul>	✓	✓	✓
17.2	<ul style="list-style-type: none"> <li>Discuss and agree mooring buoy positions with users.</li> <li>Investigate legal implications of providing yacht moorings.</li> <li>Request tenders for placement of moorings and conservation zone marker buoys.</li> <li>Engage contractor to deploy moorings and marker buoys.</li> </ul>	✓ ✓	✓ ✓ O	✓
17.3	<ul style="list-style-type: none"> <li>Prepare maintenance plans and sub-contract as needed.</li> </ul>	✓ O		
17.5	<ul style="list-style-type: none"> <li>Install/maintain terrestrial nature trail(s) on Petit Bateau.</li> <li>Investigate options for providing on-shore toilet facilities on Petit Bateau and implement preferred solution.</li> </ul>	✓	✓	✓
18	<ul style="list-style-type: none"> <li>Finalise communication plan.</li> <li>Prepare key communication products confirming agreed park regulations.</li> </ul>	✓ O ✓ O		
20.1	<ul style="list-style-type: none"> <li>Prepare staff handbook.</li> <li>Review support and insurance needs of rangers.</li> </ul>	✓ ✓	✓	
20.3	<ul style="list-style-type: none"> <li>Design and implement programme of training for TCMP institutional and operational development</li> <li>Prepare training plan.</li> <li>Begin implementation of training plan.</li> </ul>	✓ O	✓ ✓	✓ ✓
21.3	<ul style="list-style-type: none"> <li>Prepare full business plan and keep in review.</li> <li>Install full financial management system.</li> <li>Develop TCMP merchandise for sale to visitors.</li> </ul>	✓ ✓	✓	✓ ✓
22	<ul style="list-style-type: none"> <li>Update legislation on park's enforcement powers.</li> <li>Develop simple 'ticketing system' for minor offences.</li> </ul>	✓	✓	
23	<ul style="list-style-type: none"> <li>Prepare park monitoring and evaluation plan.</li> <li>Provide staff training as needed for monitoring plan.</li> <li>Collect data as needed for park monitoring and evaluation.</li> <li>Evaluate monitoring data annually and present at AGM.</li> <li>Prepare and keep in review research plan for TCMP.</li> </ul>	✓ O ✓ O ✓ O	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓
25	<ul style="list-style-type: none"> <li>Confirm process for legal recognition of management plan.</li> </ul>	✓		

## 26. References

Anon, 1998. [By Kurt Cordice?] Management Plan for the Tobago Cays. Project Proposal Development 1998.

Anon, 2005. Consultations on Proposed Fee System in Tobago Cays Marine Park. (1) Held at the Methodist Church Hall in St Vincent on September 19<sup>th</sup> 2005, (2) Held at the Union Island Secondary



School on September 20<sup>th</sup> 2005, (3) Held at the Bequia Anglican High School on September 23<sup>rd</sup> 2005.

Appropriate Technologies Ltd, 2006. Feasibility Study on Water, Health, Sanitation & Carrying Capacity of the Pedro Bank. Report to TNC, Jamaica.

Byrne, J, 2005 (November). Tobago Cays Marine Park. Existing Management Plans Analysis. TNC, Eastern Caribbean Programme, USVI.

CCA CaMMP. 2002. A participatory strategic plan for sustainable development in the Granadines. Sustainable Integrated Development and Biodiversity Conservation in the Grenadines, Coastal and Marine Management Programme. CCA, Barbados, Version 1, 55pp.

CEC, 2005 (April). Strengthening environmental stewardship among major stakeholders in the Grenadine Islands. The Grenadines Water Taxi Project. Inception Report. Carriacou Environmental Committee, Hillsborough, Carriacou, Grenada, April 2005. 14pp.

CEC, 2006 (Jan). Strengthening environmental stewardship among major stakeholders in the Grenadine Islands. The Grenadines Water Taxi Project. Report on Caring for our Coasts and our Future Workshops. Carriacou Environmental Committee, Hillsborough, Carriacou, Grenada, January, 2006. 11pp.

CERMES, 2004. Report of the vision and project planning workshop for Southern Grenadines Water Taxi Association and Carriacou Petite Martinique Water Taxi Association held on June 27-28, 2004, Carriacou, Grenada. 25pp.

CERMES. 2005. Report of the Inception Training Workshop for Enhancing the Management Effectiveness of the Tobago Cays Marine Park, St. Vincent and the Grenadines. Union Island 19-20 December 2005. CERMES Regional Project on Enhancing Management Effectiveness at Three Marine Protected Areas in St. Vincent and the Grenadines, Jamaica and Belize. Report No.1. 25pp.

CERMES, 2006 (Feb). Report of the fisherfolk planning workshop. Robert Divonne Marine Centre, Mayreau. February 15-16, 2006. 16pp.

Charlier, G., 2004 (26 April). Project Appraisal Document on a proposed grant from the GEF in the amount of \$3.7m to the OECS for a OECS Protected Areas and Associated Livelihoods Project. World Bank. Report No. 28621.

Coral Cay Conservation Ltd. (CCC), 2002 (December). Tobago Cays Marine Biodiversity Conservation Project. Summary Report. 18pp + maps.

Cordice, K., 1998 (August). Tobago Cays Marine Park. Management Plan.

Cordice, K., 2000. Tobago Cays Marine Park. Management Plan Revisions.

Cordice, K., 2003 (17 February). TCMP Information Document. 9pp + App. 1-3.

Deschamps, A., A. Desrochers, and K.D. Klomp, 2003. A rapid assessment of the horseshoe reef, Tobago Cays Marine Park, St Vincent, West Indies (stony corals, algae and fishes). pp 438-459 *In*: Lang, J.C. (Ed). July 2003. Status of coral reefs in the Western Atlantic: results of initial surveys, Atlantic and Gulf Rapid Reef Assessment (AGRRA) program. Atoll Research Bulletin No 496. ([http://www.agrra.org/ARB\\_volume/TobagoCays7-22-03F.pdf](http://www.agrra.org/ARB_volume/TobagoCays7-22-03F.pdf))

Doyle, C. 2004. Deck view from Ti Kanot by Chris Doyle. The Tobago Cays in Crisis. Caribbean Compass. January 2004.

ECLAC, 2002. St Vincent and the Grenadines, Evaluation of the Tobago Cays Marine Park. ECLAC Caribbean Development and Cooperation Committee.

Ecoengineering Caribbean Limited, 2007. Environmental and Socio-Economic Studies for OPAAL Demonstration Sites. Tobago Cays Site Report, St. Vincent And The Grenadines. Eco Report No. 06/2007, July 31, 2007.

- Espeut, P., 2006 (March). Opportunities for Sustainable Livelihoods in One Protected Area in Each of the Six Independent OECS Territories, for the OECS Protected Areas and Sustainable Livelihoods (OPAAL) Project. OECS Contract Number OECS/121/05. 160pp.
- Fontenard, T., 2007 (March). Communication Plan for Tobago Cays Marine Park (TCMP), OPAAL Site, St Vincent and the Grenadines. Second Draft. OPAAL. March 5, 2007.
- Friends of Tobago Cays (FOTC), 2005 (September). Consultation on a Fee System for the Tobago Cays Marine Park. Friends of the Tobago Cays.
- Franklin, A. and R. Mahon, 2003. Annotated Bibliographic Information on the Grenadines. Sustainable Integrated Development and Biodiversity Conservation in the Grenadines, Coastal and Marine Management Programme. CCA, Barbados. 16pp.
- French Mission for Cooperation (FMC) and Fisheries Division (FD), St Vincent and the Grenadines, 1995. Tobago Cays Marine Park Project. Reef Monitoring Programme. Evolution of the Tobago Cays Coral Reefs June 1994-January 1995.
- French Mission for Cooperation (FMC), 1995 (December 1993, updated March 1995). Action Plan for the Tobago Cays National Marine Park.
- Heyman, A.M., T.J. Reigert, A. Smith, T. Shallow and J.R. Clark, 1988. Project Proposal Development of the Tobago Cays National Park. Government of St Vincent and the Grenadines and Organisation of American States. 62pp. + Annexes 1-5.
- Hockings, M., S. Stolton and N. Dudley, 2000. Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas. IUCN, Gland, Switzerland and Cambridge, UK. x + 121pp. (See <http://www.iucn.org/themes/wcpa/pubs/guidelines.htm>).
- Homer, F. & D. Shim, 2004 (16 April). St Vincent and the Grenadines Environmental Management Strategy and Action Plan. CIDA. 50pp.
- Hope, A. & S. Timmel, 1984. Training for Transformation, Intermediate Technology Publications, London.
- Ivor Jackson and Associates (IJA), 2004a). Master Plan: System of Protected Areas and Heritage Sites, St. Vincent and the Grenadines. Report #1. Government of St. Vincent and the Grenadines, National Parks Project.
- Ivor Jackson and Associates (IJA), 2004b). Institutional and Organizational Structure: National Parks Authority. Report #2. Government of St. Vincent and the Grenadines, National Parks Project.
- Ivor Jackson and Associates (IJA), 2004c). Development Proposals - Tobago Cays Marine Park - September, 2004. Report #3. Government of St. Vincent and the Grenadines, National Parks Project.
- Ivor Jackson and Associates (IJA), 2004d). Management Guidelines - Tobago Cays Marine Park - September, 2004. Report #4. Government of St. Vincent and the Grenadines, National Parks Project.
- Kelleher, G., 1999. Guidelines for Marine Protected Areas. IUCN, Gland, Switzerland and Cambridge, UK. xxiv + 107pp. (See <http://www.iucn.org/dbtw-wpd/exec/dbtwpub.dll>).
- Mahon, R., S. Almerigi and A. Franklin, 2002. Stakeholders in Sustainable Development in the Grenadine Islands. Sustainable Integrated Development and Biodiversity Conservation in the Grenadines, Coastal and Marine Management Programme CCA, Barbados. 16pp.
- Mayreau Environmental Development Organization (MEDO), 2003 (Sept 19). A Management Proposal for the Tobago Cays Marine Park, St. Vincent and the Grenadines.
- McConney, P. 2005. CERMES regional project on: "Enhancing management effectiveness at three marine protected areas, in St. Vincent and the Grenadines, Jamaica and Belize".

- McConney, P. 2007. MPA-ME News. A bulletin of the CERMES regional project on “Enhancing management effectiveness (ME) at three Marine Protected Areas (MPAs) in Belize, Jamaica and St. Vincent and the Grenadines. Issue No. 2 — 29 January 2007. 4pp.
- Moor Seacure International (MSI), 2004. Tobago Cays and Southern Grenadines Mooring Report and Specifications.
- OPAAL, 2006 (August). The WWF-World Bank Alliance’s Scorecard to Assess Progress in Achieving Management Effectiveness Goals for MPAs adapted for PAs of the OECS. Presentation of the Score Card (SC).
- Palm Island Resorts Ltd, 2003 (May 11). St Vincent and the Grenadines, Tobago Cays National Marine Park. Management Proposal.
- Parsram, K., 2007. Capacity Building for Protected Areas Planning and Management and Associated Livelihoods. Protected Areas Training Needs Assessment. St. Vincent and the Grenadines Country Report. Report to OPAAL project. vi + 46 pp
- Pena, M. 2006. Report on Management Effectiveness at the Tobago Cays Marine Park (TCMP), St. Vincent and the Grenadines. CERMES Regional Project on Enhancing Management Effectiveness at Three Marine Protected Areas in St. Vincent and the Grenadines, Jamaica and Belize. Report No. 5. 59 pp.
- Pomeroy, R.S., J.E. Parks and L.M. Watson. 2004. How is your MPA doing? A guidebook of natural and social indicators for evaluating marine protected area management effectiveness. IUCN, Gland, Switzerland and Cambridge, UK. 217 pp.  
(<http://www.effektivempa.noaa.gov/guidebook/guidebook.html>)
- Project Implementation Unit, 2005a (Dec). The Sustainable Grenadines Project. Annual Report for 2005. 44pp.
- Project Implementation Unit, 2005b (Nov). The Sustainable Grenadines Project. Annual Workplan for 2006. 20pp.
- Project Implementation Unit, 2006 (July). The Sustainable Grenadines Project. Overview. 9pp.
- Richards Kramer, P. and J.C. Lang, 2003. The Atlantic and Gulf Rapid Reef Assessment Protocols: Former Version 2.2. pp 611-624 *In*: Lang, J.C. (Ed). July 2003. Status of coral reefs in the Western Atlantic: results of initial surveys, Atlantic and Gulf Rapid Reef Assessment (AGRRA) program. Atoll Research Bulletin No 496. ([http://www.agrra.org/ARB\\_volume/Appendix%20One7-22-03F.pdf](http://www.agrra.org/ARB_volume/Appendix%20One7-22-03F.pdf))
- SMMA, 2001. Framework to Guide the Design and Conduct of Research and Monitoring Programmes and Activities within the Soufriere Marine Management Area (SMMA). 11pp.
- The Nature Conservancy, 2001a. Long-term Financial Planning for Parks and Protected Areas. The Nature Conservancy, Virginia, USA.
- The Nature Conservancy, 2001b. Funding Protected Areas in the Wider Caribbean – A Guide for Managers and Conservation Organisations. UNEP Caribbean Environmental Programme, Jamaica and The Nature Conservancy, USA.
- The Nature Conservancy (TNC), 2005 (June 17). Tobago Cays Marine Park. Measuring Success: Site Consolidation Scorecard.
- WCPA (Financing Protected Areas Task Force of the World Commission on Protected Areas of IUCN), in collaboration with the Economics Unit of IUCN, 2000. Financing Protected Areas. IUCN, Gland, Switzerland and Cambridge, UK. viii+58pp. (<http://www.iucn.org/themes/wcpa/pubs/guidelines.htm>).

## **Annex 1. Monitoring and evaluation framework**

The first section of this annex (Section A1.1) describes relevant and recent experiences of TCMP staff in projects involved in monitoring and evaluation. The following section (A1.2) then proposes a series of checklists including the questions and indicators that may be used in future annual evaluations of the park. As stated in Section 23, this framework needs to be reviewed by stakeholders, considering the previous experience listed below, and finalised for use in the forthcoming years.

### **A1.1 Relevant park experience in monitoring, evaluation and research**

Park staff have over the years been involved in a number of different research and evaluation exercises. These activities have increased park capacity for their management role and provided experience in specific monitoring techniques relevant to the TCMP. The results from these studies also provide valuable information on the state of the resource (or whatever is measured) at the time of the survey. By repeating the same methodologies in future, this information may be used to detect changes in the park status over time. Such information and the approaches used to assess them may thus be very useful in the future monitoring plan.

#### ***Biological monitoring***

The park has utilised the 'Reef Check' methodology ([www.reefcheck.org](http://www.reefcheck.org)) in two recent projects to provide standardised and internationally comparable indicators of the abundance of key reef species. Training in the Reef Check survey methods was provided to park staff and others under a mini project of the Sustainable Grenadines project in April 2005 (CERMES, 2005). The four sites surveyed in 2005 were then re-assessed in May and October 2006 as one element of CERMES' broader 'Enhancing Management Effectiveness' project (Pena, 2006). The sites have been marked with metal stakes and the assessments were conducted in collaboration with the SVG Fisheries Division.

The Reef Check surveys provide useful standardised data that can be used to compare the status of the TCMP sites with others around the Caribbean region. Since the Reef Check surveys focuses mainly on indicator species, however, the methodology does not give a full picture of the status and diversity of marine resources. The more comprehensive protocol adopted by the Atlantic and Gulf Rapid Reef Assessment (AGRRA) programme has also been used in the TCMP by Deschamps et al (2003, see Section 5.2.3). Deschamps et al's studies quantified the condition of four sites on the outside of the Horseshoe Reef in 1999, against which future changes in condition may be measured. TCMP staff have not been trained in AGRRA survey methods (Richards Kramer and Lang, 2003) but it is suggested that scientific expertise (e.g. from UWI) could be sought for occasional more detailed surveys, such as for the 3-yearly review of the plan progress.

As further options, if the positions of the 15 photoquadrat stations fixed in the Tobago Cays by FMC and FD (1995) are still identifiable (permanent PVC quadrat mounts were cemented to the reef base), valuable quantitative comparisons could be made of the changes since 1995. On a more qualitative level, the 1987 photographs included in the OAS report of Heyman et al (1988) provide a valuable illustration of the state of resources at that time.

#### ***Water quality monitoring***

The CERMES 'Enhancing Management Effectiveness' project (Pena, 2006) also conducted water sampling at its Reef Check sites in May-September 2006, in addition to a further

'upstream' site at Egg Reef. The TCMP rangers were thus trained in sea water collecting methods for both chemical (nitrates and phosphates) and biological (bacteria) parameters. Water samples were analysed by the SVG Bureau of Standards laboratory, with the assistance of Fisheries Division staff. The 2006 studies provided some useful results and experience, but due to problems with data collection and analysis, the project recommended that all of these results be discarded (Pena, 2006). Further studies are still required in both the tourist low and high seasons.

### **Evaluation exercises**

TCMP staff participated in a TNC-led workshop in June 2005 to complete a 'Site Consolidation Scorecard' for the park. The report on this exercise (TNC, 2005) suggests that the scorecard system could be usefully re-evaluated every 6-12 months as a self-evaluation tool.

As noted in the two preceding sub-sections, TCMP staff have been involved in the CERMES-led 'Enhancing Management Effectiveness' project since October 2005 (McConney, 2005; Pena, 2006). Finishing in March 2007, this project has developed a series of 16 indicators relating to the objectives of the TCMP. The indicators measure different biophysical, socio-economic and governance conditions in the marine park following a recent guidebook by Pomeroy et al. (2004). Over the last year, park staff have collected existing information, and undertaken natural and social science surveys, to quantify the indicators and thereby measure the effectiveness of the TCMP in achieving its management objectives. Summarising the project, McConney (2007) confirmed that park staff now appreciate the importance of evaluating management and have reasonable capacity to conduct in-house evaluations. This recent capacity building now needs to be 'mainstreamed' into the management process for the TCMP by making sure that the results of analyses are used in guiding management decisions. Although the project has given park staff useful experience in the types of monitoring required to guide decision making, it is argued that a more comprehensive framework as described below will be required to enable the park to make the best long term decisions. Several of the indicators adopted by the CERMES project are included in the evaluation framework.

As part of the OPAAL preparations, park staff, board members and other stakeholders also partially completed the WWF-World Bank 'Scorecard to Assess Progress in Achieving Management Effectiveness Goals for MPAs' at a workshop on 18 August 2006 (OPAAL 2006). This is based on the IUCN-WCPA framework of Hockings et al (2000), adopted in the system of evaluation indicators proposed below. The Score Card provides a quick overview of the initial state of management efforts and progress over time, but needs to be supplemented by more thorough and quantitative indicators to guide adaptive management as described below.

## **A1.2 Evaluation framework and indicators**

As outlined in Section 23.1, a set of indicators should be monitored to determine the status of the TCMP in future years, and to provide information that may help to explain that status and guide future actions. The indicators proposed below are based on the framework of Hockings et al (2000), as adapted to the specific needs and objectives of the TCMP. Some of the questions can be answered qualitatively without detailed study. Most of the actual indicators, as given below *in italics*, will require data collection exercises to be conducted.

### **Context** – *Where are we now?*

This question looks at the conservation and other values of the protected area and the particular threats and opportunities that may be affecting it, including the broad policy environment. This information provides the necessary background and helps to identify the current priorities for management efforts. Such information is included in Part 1 of this management plan. The following questions may be asked to review this information:

- Has the national or global significance of the TCMP changed, either in cultural, biological or economic terms? Have any new resources or endemic species been discovered that require new management efforts?
- Have the levels of external threats changed? (*Monitor levels of pollution or climate change, e.g. using weather data recorded at Union Airport - rainfall, wind, air temperature.*)
- Have the levels of internal impacts changed? (*Monitor impacts of human use: e.g. numbers of yachts, divers and other users; levels of poaching; damage to corals by careless divers.*)
- Has the vulnerability of the park increased? Have boundary markers or signs been lost?
- Has the park been affected by any natural factors such as hurricanes or diseases, outside the control of management?
- Has the national context of protected areas in SVG changed? Have the numbers of tourists increased, or the GDP decreased, putting more pressure on natural resources? Have government policies on nature conservation and use changed?

### **Planning** – *Where do we want to be and how are we going to get there?*

This question addresses the *intended* outcomes of the protected area – the mission, goals and objectives of the TCMP – and the implications of national and local planning efforts for their achievement. This information is included in parts of Sections 10 to 14 of this plan.

- Is SVG's national legislation for marine parks adequate?
- Is the supporting legislation for the TCMP adequate to achieve the objectives?
- Is the TCMP zonation plan effectively protecting resources, sustaining livelihoods and minimizing conflicts? Are any conservation zones too small to effectively protect resources?
- Are the mission and goals of the TCMP shared by most community members and TCMP staff?
- Are the management objectives clearly linked to the vision and goals?
- Is the management plan clear?

### **Inputs** – *what do we need?*

This question addresses the adequacy of management *resources*, relative to the management objectives set for the site. Such issues are mostly covered in Sections 20 and 21 of the management plan.

- Does the TCMP have adequate staff? (*Monitor numbers of staff employed and their performance against their job descriptions*)
- Does the TCMP have adequate funds, equipment and facilities? (*Monitor financial information as described in Section 21*)
- Are the resources being effectively applied to different park needs? (*Monitor time spent by each staff on different activities, e.g. for patrolling, community liaison, administration etc*)
- Have partners assisted e.g. with fund-raising and monitoring? Have TCMP members or other volunteers contributed, e.g. in their committee roles? Have external collaborators made their inputs as expected? Should different partners be sought?

### **Process – how do we go about it?**

This question is about the adequacy of management processes and systems in relation to the management objectives set for the site. Management processes are described in Sections 11, 15-19, 22 and 23 and of this Plan. Monitoring the process of management can involve indicators for many different factors, e.g. as listed below. Some of these may be best answered descriptively, rather than by quantitative indicators. In some cases, scoring systems may be used to define standards and enable comparisons to be made between years. Scores may, for example, range from zero points for 'complete failure' to carry out the task, up to four points for 'full compliance'.

- Planning: have TCMP meetings been held? Has advice been provided by TCMP management, e.g. to the board or cabinet and then overridden or ignored?
- Maintenance: have equipment and facilities been maintained?
- Enforcement: have patrols been carried out? (*Monitor enforcement coverage, e.g. as Indicator G15 of Pena, 2006*). Have warnings been issued and followed up when needed? Are penalties adequate? (*Monitor estimated numbers of rule infringements; numbers of bookings (or tickets issued) for offences; and numbers of successful and unsuccessful prosecutions.*)
- Communication: have meetings and new regulations been adequately publicized?
- Education: *Monitor number of events held for the public, commercial operators resource users etc. Monitor level of understanding of human impacts on marine resources e.g. as Indicator S3 of Pena, 2006.*
- Training: have staff have been trained as required?
- Research: have projects been defined and implemented as required?
- Monitoring and evaluation: have indicators been collected and results and recommendations fed back into the management process?
- Reporting: have annual and quarterly reports and other papers been written?
- Visitor management: have the park office and the ranger outpost station been manned when needed? Have visitors been satisfied with their experiences?
- Resource user management (yachts, divers, fishers, commercial operators): have adequate regulations been set to ensure sustainable resource use?
- Participation: have meetings been structured to promote and reward participation (e.g. by ensuring that decisions are followed up)? Have meetings been well attended by TCMP board / committee members and the public?
- Conflict resolution: have conflicts been solved when reported? How long has the process taken?
- Personnel management: have TCMP personnel received salaries, benefits, training etc on time and had their performance appraised at least annually?
- Budget and financial control: are secure, transparent mechanisms in place for handling cash, accounting and auditing? Have all fund-raising sources been considered?

### **Outputs – what did we do and what products or services were produced?**

This component considers the extent to which work programs and activities have been implemented. The focus here is not so much on whether these actions have been well planned, or have achieved their desired objectives, but simply on whether the activities have been carried out as scheduled in the plan. Outputs should be mainly measured against the activities specified in Sections 17, 18, 22 and 23 and the budgets defined in Section 21.

- Have work programs, e.g. for resource management, public education or enforcement activities been implemented as planned? (Note that several of these still need to be planned in detail with milestones and deadlines).
- Have any collaborative projects been implemented as planned?
- What tasks were carried out by each TCMP staff and committee member?
- Have expenditures been spent as planned and within budget?

## **Outcomes – what did we achieve?**

At the bottom line, this question asks whether management has been successful in delivering the objectives of the plan, as given in Section 10 and at the start of other plan sections. The achievement of such objectives is the true test of management effectiveness.

### **Conservation objectives**

- Has the health of coral reefs been maintained? (*Monitor coral reef abundance, quality and diversity e.g. using Reef Check system or photoquadrats at cemented benthic stations. Survey distribution of coral reef and other habitats every 3-5 years to detect any changes in resource quantity.*)
- Has the abundance of fish stocks and other marine life been restored or maintained? (*Monitor using Reef Check system for key species within park, e.g. as Indicator B1 of Pena, 2006. Monitor number of turtles observed in the park, e.g. once every month for a standardised searching time and route.*)
- Has the biodiversity of the islands been maintained? (*Survey birds, reptiles, vegetation on each island every 3-5 years.*)
- Has the scenery of the park or the perceived quality of the environment changed? (*Rangers to monitor dumping of garbage inside the park.*)
- Has water quality in the park been maintained at levels that are safe for humans and non-damaging to marine life? (*Collaborate with Fisheries Division to monitor water quality, e.g. as Indicator B8 of Pena, 2006.*)

### **Sustainable use objectives**

- Has the TCMP sustained local livelihoods? (*Monitor numbers of people employed in the park as water taxi operators, vendors, tour operators, dive leaders, or other park related businesses, and the numbers fishing outside the park, e.g. using Indicator S9 of Pena, 2006.*)
- Has the quality of local livelihoods been maintained? (*Monitor incomes or wealth ranks of different stakeholder groups, giving due sensitivity and confidentiality to the data, and using methods acceptable and relevant to community members e.g. as Indicator S7 of Pena, 2006.*)
- Has the TCMP sustained local tourism opportunities? (*Monitor number of visitors, numbers of yacht and cruise liner visits etc.*)
- Has the TCMP provided high-quality tourism experiences? (*Monitor visitors' satisfaction of resource status and tourism services using anonymous questionnaires, to be submitted via commercial operators, at the TCMP office or through the website.*)