Socio-economic monitoring by National Marine Parks in the Turks and Caicos Islands Report No. 3

Socio-economic Monitoring at the Columbus Landfall National Park Grand Turk, Turks and Caicos Islands

PREPARED BY THE DEPARTMENT OF ENVIRONMENT AND MARITIME AFFAIRS

Centre for Resource Management and Environmental Studies (CERMES)
University of the West Indies, Faculty of Science and Technology
Cave Hill Campus, Barbados
2014

EXECUTIVE SUMMARY

The Columbus Landfall National Park (CLNP), located along the western shoreline of Grand Turk, Turks and Caicos Islands, has experienced an exponential increase in use, since the opening of the Grand Turk Cruise Centre (GTCC) in February 2006.

Once a sleepy island village, with a small, artisanal tourism industry, based on scuba diving, Grand Turk now receives greater than half of all tourist arrivals in the Turks and Caicos Islands. In 2014, GTCC estimates that 1,000,000 cruise ship passengers will disembark in Grand Turk. Most of them will engage in activities within the CLNP.

Common activities in CLNP include diving, snorkelling, swimming, aquatic sports, such as pull-behind floats and water skiing. While CLNP is a no-take MPA, illegal fishing activities also take place regularly. Each of these activities has related risks and impacts.

Key informant interviews and a focus group meeting were used to determine stakeholder perceptions of resource health, management effectiveness and stewardship roles. Key informants were asked a series of 27 questions, and their responses guided the focus group discussion.

Throughout the process, prevalent themes regarding the four SocMon objectives arose, primarily based on issues related to the lack of training, resources and funding available for the Department of Environment and Maritime Affairs (DEMA), the management authority of the CLNP. Another theme which arose was the strong sense of stewardship which is already well-established within Grand Turk's small resident population.

ACKNOWLEDGEMENTS

Contents

<u>Citation</u>

<u>Disclaimer</u>

<u>Contact</u>

Kathleen Wood
Director
Department of Environment and Maritime Affairs (DEMA)
Lower Bight Road, Providenciales
Turks and Caicos Islands
Phone: (649) 941-5122   Fax: (649) 946-4793
Email: kw@swa.tc
Website: www.gov.tc/environment

Maria Pena
Centre for Resource Management and Environmental Studies
University of the West Indies, Cave Hill Campus, Barbados
Phone: (246) 417-4727 Fax: (246) 424.4204
Email: maria.pena@cavehill.uwi.edu
Website: http://www.cavehill.uwi.edu/cermes

1 INTRODUCTION

The following report represents an initial socio-economic study of the Columbus Landfall National Park (CLNP), located in Grand Turk, Turks and Caicos Islands.

1.1 SOCIO-ECONOMIC MONITORING AT NATIONAL MARINE PARKS IN THE TURKS AND CAICOS ISLANDS

Socio-economic monitoring for coastal management in the Caribbean (SocMon Caribbean) is a globally networked, regionally adapted, practical methodology of socio-economic monitoring for coastal management (Bunce and Pomeroy 2003, Bunce et al. 2000). SocMon aims to facilitate community-based socio-economic monitoring, while building regional capacity to sustain socio-economic monitoring programs through training of coastal managers. The Centre for Resource Management and Environmental Studies (CERMES) at the University of the West Indies, Cave Hill Campus is the regional SocMon node for English-speaking Caribbean countries. The program is co-ordinated by NOAA, in partnership with the Global Coral Reef Monitoring Network (GCRMN) and is funded through NOAA Coral Reef Conservation Grants, and the US State Department, among others.

CERMES was awarded a grant of just over USD 22,000 to support *Socio-economic monitoring at national marine parks in the Turks and Caicos Islands*. The grant was funded by the Coral Reef Conservation Program (CRCP) of the National Oceanic and Atmospheric Administration (NOAA) and administered by the Gulf and Caribbean Fisheries Institute (GCFI). The project's long-term conservation outcome is that of increased capacity for effective marine protected area (MPA) management in the Turks and Caicos through the use of social and economic monitoring data in MPA decision-making achieved via:

- Training approximately 10 MPA managers/staff and stakeholders from the Turks and Caicos, in the practical use of SocMon Caribbean methods via one 'learning-by-doing' local 7-day workshop. Extension of the opportunity for capacity building in SocMon for one representative of the British Virgin Islands National Parks Trust to participate in the training workshop.

- The initiation of three site assessment and monitoring programs at the Princess Alexandra Land and Sea National Park (PALSNP), Columbus Landfall National Park (CLNP), and West Caicos Marine National Park (WCMNP) for coastal management with technical assistance and advice provided by CERMES.

- Provision of sub-grants to help support SocMon assessments at CLNP and WCMNP as follow-up activities to the initial training and assessment at PALSNP.

- Documentation of training and monitoring processes, making them available to a worldwide audience and CERMES communications for replication, with improvement, in future rounds of SocMon activity

- Submission of data to the Reef Base Socio-Economic global database and to the Caribbean Marine Protected Area Management (CaMPAM) Network and Forum database for uptake.

This report presents project activities and results of socio-economic monitoring conducted at the Columbus Landfall National Park. The CLNP was the second Protected Area in the Turks and Caicos Islands to implement monitoring using SocMon techniques.

1.2 SITUATION OVERVIEW

The Department of Environment and Maritime Affairs (DEMA) is charged with the management and stewardship of Protected Areas in the Turks and Caicos Islands (TCI). In recent years, political instability and the global economic downturn have resulted in a drastically reduced operating budget and staff reductions of more than 60%. The end result being that DEMA struggles to stretch scarce resources to adequately fulfil its mandate.

The Columbus Landfall National Park is described in Site Plan NP3 (Amended by L.N. 3/2006) and Campbell, Fisher and Perez 2006, as an area of 1,280 acres on the western coast island of Grand Turk comprising the area of sea from high water mark to the reef wall, a straight line from the North Creek entrance to BP 782 800, along the edge of the reef wall to BP 773 704, a straight line to Boaby Rock Point, along the high water mark to the starting point excluding the Grand Turk Cruise Centre dock area (Figure 1; Campbell, Fisher and Perez 2006; TCIG 1998).

Following the establishment of a system of protected areas in the Turks and Caicos Islands in 1992, an assessment of threats to these protected areas revealed that the CLNP was directly impacted from land based development and marine traffic. Based on usage and development the CLNP was recommended for priority management intervention. Management goals for protected areas in and around Grand Turk (CLNP, Grand Turk Cays Land and Sea National Park, Long Cay Sanctuary and South Creek National Park) are resource conservation, sustainable use and education and scientific research.

The primary feature of the CLNP is the fringing coral reef wall that runs north/south along Grand Turk's west coast, beginning at depths between 5 and 15 metres and bordering the edge of a vertical drop off into the Turks Islands Passage (TCIG, 1998, p.12; Campbell, Fisher and Perez 2006, p.22).

The Management Plan for the Columbus Landfall National Park describes the ecology of the CLNP as follows:

The coral community on the west coast … consists primarily of large boulder formations, namely Montastraea spp., Siderastrea spp. and Diploria spp. Plate corals, Agaricia spp. and other encrusting species are also profuse, particularly where the face of the wall overhangs the deep. Equally abundant are the octocorals, mainly Pseudoptergorgia spp., Pseudoplexaura spp. and Briareumasbestinum. Generally, algal cover is relatively low, and consists primarily of the calcareous forms. Sponges are mostly encrusting species; however scattered colonies of Iricinia and Proifera species exist.

The reefs within Columbus Landfall National Park also appear to be healthier than those on the east coast, with higher percentage live coral cover and much lower macro algal abundance. The fish community composition and diversity for the northern, central and southern sections of the Columbus

Landfall National Park are quite similar. Over 62 species of reef fish have been identified. The fish community is dominated by grazers namely, Black Durgeon (Melichthysniger), Blue Tangs (Acanthuruscoeruleus), Princess Parrotfish (Scarustaeniopterus), Queen Parrotfish (Scarusvetula) and Redband Parrotfish (Sparisomaaurofrenatum), together accounting for more than 50 % of the total fish population (Campbell, Fisher and Perez, p.24).

Figure 1 Map showing the boundaries of the Columbus Landfall National Park

3

According to the National Parks Ordinance (1975) national parks such as the CLNP are areas that should be opened to the public for recreational use such as camping, fishing (non-commercial recreational fishing from the shore or piers or jetties with gear restrictions) and sailing. Certain types of development are permitted but this development should be limited to infrastructure that facilitates enjoyment of the public (Campbell, Fisher and Perez, p.27). The CLNP is used for a variety of commercial, recreational, religious and tourism activities (Columbus, Fisher and Perez, p. 28).

A number of private yachts, sailboats, powerboats and cruise ships visit Grand Turk annually. Regularly scheduled visits of cruise ships to the Turks and Caicos Islands began in 2006 resulting in a dramatic increase of recreational activities within the system of protected areas. In 2014, the Grand Turk Cruise Centre (GTCC) estimates that 1,000,000 cruise ship passengers will disembark in Grand Turk. Most of them will engage in activities within the CLNP.Common activities in the CLNP include diving, snorkelling, swimming, aquatic sports, such as pull-behind floats and water skiing. While CLNP is a no-take MPA, illegal fishing activities also take place regularly. Each of these activities has related risks and impacts.

At the time of development of the CLNP management plan, Campbell, Fisher and Perez (p. 42), noted that the zones that had been established for the CLNP were inadequate; there was a lack of awareness of the boundaries of the Park; and areas surrounding the Port posed a conflict with the objectives of Grand Turk protected areas. They also noted that of all the protected areas of Grand Turk, the CLNP at that time was highly susceptible to land-based sources of pollution due to concentrated development of the west coast (p.44).

Also at the time of development of the management plan, there was only limited community and stakeholder involvement in protected areas management in Grand Turk primarily attributed to limited usage of protected areas there. With increased cruise ship arrivals to Grand Turk the situation changed. The resulting higher use of the area, lead to the revitalization of the National Parks Environmental Advisory Committee (NPEAC) which has since become defunct. The committee comprised representatives from various islands and sectors and functioned primarily to advise the Minister on matters relating to protected areas and environmental issues.

In terms of demographics, the 2012 Preliminary Census Report states that during the period from 2001-2012, Grand Turk's resident population increased by about 22% (TCIG 2012, p.17). This report also identifies Grand Turk as the most densely populated island in the archipelago, with a population density of 700 persons per square mile (TCIG 2012, p.18). The total population of Grand Turk is estimated at 4,831.

The Turks and Caicos Islands have experienced rapid development within the past 20 years to such an extent that the population has increased by about 64% over the same time period. This increase has been largely due to an influx of foreign nationals. On Grand Turk, 42% of the population is non-Belonger and 58% of the population is Belonger (TCIG 2012, p.29).

The Preliminary Census Report also reports that the total population of the Turks and Caicos Islands includes 16,037 males (51%) and 15,421 females (49%), a sex ratio of male to female of 104 (TCIG 2012, p.18). On the island of Grand Turk, the Preliminary Census Report concludes that the

population includes 2,325 males and 2,506 females, which represents a reversal of the nation-wide trend of more males than females in the population (TCIG 2012, p.23).

The Preliminary Census Report does not include information regarding SocMon Caribbean variables of interest to this study such as age (S1), ethnicity (S3), occupation (K12, S7) or the educational background (S4) of the population.

This project is useful in providing baseline socio-economic data that may be used to guide management of the CLNP.

1.3 GOALS AND OBJECTIVES

The goal and objectives for monitoring at the PALSNP are outlined below.

Goal	Objectives
To ensure the regular and ongoing contribution of socio-economic data and information to decisions for effective management.	1. To assess uses of the National Marine Park and identify threats and problems to the natural resources.
	2. Evaluate stakeholder awareness of, and compliance with, regulations and policy and their enforcement.
	3. To determine stakeholder capacity and willingness for collaboration in CLNPstewardship and management, and promote participatory monitoring and evaluation as part of stewardship and management.
	4. To assess trends in the extent to which CLNP management bodies are contributing to the achievement of NMP goals (objectives).

1.4 ORGANISATION OF REPORT

This report is divided into six sections. Section 1 provides a description of the Turks and Caicos SocMon project, situation overview of the CLNP site where monitoring was conducted and the goals and objectives for monitoring. Section 2 outlines the methods used for gathering the data. The results from secondary sources of information, semi-structured interviews and focus group meeting are presented in Section 3. Discussions and conclusions are in Section 4. The report ends with recommendations for monitoring and adaptive management in Section 5.

2 METHODS

2.1 SOCMON TRAINING

During the period 5-13 August 2013, 14 individuals, including staff members from DEMA, representatives from the Turks and Caicos Reef Fund (TCRF) and the private sector and one individual from the British Virgin Islands (BVI), were trained at the DEMA conference room on Providenciales in SocMon Caribbean methods. The workshop was facilitated by Maria Pena and Katherine Blackman of CERMES (Pena and Blackman 2013).

2.2 PREPARATORY ACTIVITIES

Goals and objectives for monitoring at the three sites associated with the project were drafted during the SocMon training workshop (week of August 12).The goals and objectives for the CLNP SocMon were later refined during a subsequent project site visit by Maria Pena with the TCI SocMon team in the week of 30 September. At that time, the study area was defined as all land and sea areas contained within the CLNP watershed, the site monitoring plan was developed, and the SocMon team was determined (Appendix 1). It should be noted that some changes to the site monitoring plan such as variables selected for monitoring were made during initiation of monitoring.

The project suffered one setback with the resignation of two DEMA staff members in October and November 2013 who were vital to the SocMon team (see section 2.3). As a result, the administering of household surveys as originally planned during development of the CLNP site monitoring plan became unrealistic. The decision to conduct a preliminary scoping assessment was therefore made, which relies heavily on key informant interviews, a focus group meeting and secondary sources of information.

2.3 SOCMON TEAM

The SocMon team for the CLNP was defined during a follow-up site monitoring planning session during the week of 30 September; however, with the resignation of key team members Jasmine Parker and Jodi Johnson, the team's composition and allocation of responsibilities was revised accordingly. The following table illustrates the SocMon team appointed for the CLNP SocMon study. Throughout the analysis period, the responsibilities for various team members changed, in order to adapt to other work-related obligations.

Role on team (or skill requirement)	Specific tasks	Proposed team member
Manager/coordinator	Coordination of project activities	Kathleen Wood
Secondary data collectors	Collect and acquire secondary data	Eric Salamanca NaqqiManco Kathleen Wood
Focus group meeting	Coordinate and facilitate meeting	Carey Skippings Kathleen Wood

Role on team (or skill requirement)	Specific tasks	Proposed team member
		Rodney Smith
Data collection coordinator	Coordinate field data collection	Carey Skippings
		Rodney Smith
Data entry	Compile data	Amy Avenant
		Kathleen Wood
Data analysis and interpretation	Analyze and interpret data	Kathleen Wood
Reporting	Report compilation	Kathleen Wood
Public Relations	Communicating results	All team members

2.4 SECONDARY DATA

Secondary data for the CLNP were collected from a variety of sources and included reports, articles, management plans and legislation. A comprehensive list of secondary sources appears within the References for this report. These secondary sources of information were used to guide data collection at the CLNP and corroborate results.

2.5 SEMI-STRUCTURED INTERVIEWS

A semi-structured interview was designed and conducted by the SocMon team following review and approval by CERMES (Appendix 2). The interviews were conducted with eleven key informants and included Government officials, self-employed persons, and representatives of the Grand Turk Cruise Centre, water sports operators, dive operators, restaurateurs and entrepreneurs,.

Twenty-two survey variables were used to collect the relevant data, 13 of which were original SocMon Caribbean variables (Bunce and Pomeroy 2003). Of these thirteen variables, recommendations have been made for the revision of one variable for collection of data specific to the objectives of the study. Four variables developed during the Caribbean Challenge SocMon project (see Pena, McConney and Blackman 2013) were adopted for use in this study. The development of five new variables was necessary to measure and capture additional data required on perceptions of management capacity and capability, sense of stewardship, perceptions of responsibility for impact reduction, origin and number of years living in the area (Appendix 3).

2.6 FOCUS GROUP MEETING

A focus group meeting was held on 20 November at 4:00 pm at Dillon Hall, Grand Turk, to collect further information on the study area (Appendix 4). The meeting was very well-attended with 32 persons participating. The following table illustrates persons in attendance and their respective organisations.

Table 1 Focus group meeting participants

Name	Organisation
Kathleen Wood	DEMA
Carey Skippings	DEMA
Rodney Smith	DEMA
Peter Lightbourne	DEMA
Rick Lovell	Grand Turk Cruise Centre
Oliver Been	Salt Cay Divers
Dwight Jones	Grand Turk Helicopter
Marina Jones	Grand Turk Helicopter
Algrove Smith	Grand Turk Diving
Franklyn Virgil	D & R Watersports
Jamal Williams	Mama's Boys' Tours
Audrey Harrell	Blue Water Divers
Mitch Rolling	Blue Water Divers
Debbie Been	Salt Cay Divers
Chris Davies-James	Grand Turk Diving
Robert Lightbourne	Get on Board
Donavon Francis	White Sand Snorkel
Damian Noyes	Screaming Reals Tours
Katharine Hart	Future of Reefs Project
Trevor Gardiner	Grand Turk Resident
Joel David Castillo	Joe Froggy Parasail
Juanita Skippings	Air Water Sports and Tours
Tomlinson Skippings	A.I.R. Watersports and Tours
Dwight Higgs	Papa J Tours
Wayne Hall	Ocean Vibes
Paul Day	Grand Turk Resident
Lamar Griffiths	Turks Islands Reef Adventure
Huntley Forbes	Grand Turk Resident
Ruddy Default	Blessings of God
Jesse Bueckert	Bohio Resort
Nathaniel Taylor	Grand Turk Resident
Chris Young	Blue Water Divers

2.7 OBSERVATIONS AND OTHER METHODS

Due to economic and staff constraints, this analysis relies heavily on secondary data, informal conversations and observations. DEMA Officers who are in the field daily observing activities in the CLNP provided anecdotal information related to all of the stated SocMon objectives.

Observations were used to gather data on key informant variables for Community Infrastructure and Business Development (K13) and Activities (K14).

2.8 DATA ENTRY AND ANALYSIS

Audio recordings of discussions during the focus group meeting were made. The data and information from the semi-structured interviews and focus group meeting were entered into an Excel spreadsheet and then analysed using narrative summaries and simple descriptive statistics. The analysis is therefore presented for the most part in the form of a discussion.

3 RESULTS

The results in this section are based on data collected from secondary sources, observations, semi-structured interviews and the focus group meeting and are presented according to the objectives for monitoring.

3.1 ASSESS USES OF THE NATIONAL MARINE PARK AND IDENTIFY THREATS AND PROBLEMS TO NATURAL RESOURCES

3.1.1 AWARENESS OF THE COLUMBUS LANDFALL NATIONAL PARK

Out of the 11 persons interviewed, the overwhelming majority (91%) indicated that they knew the boundaries of the CLNP.

Correspondingly, the same proportion of persons interviewed (91%) were rated as 'good' at being able to indicate the extent of those boundaries on a map provided during the interview with the remainder (9%) rated as 'poor' in identifying boundary extent.

3.1.2 ACTIVITIES AND WAYS OF MAKING A LIVING WITHIN THE PARK

Key informant activities within the CLNP are all marine-related with the majority engaging in swimming and beach use (82% each). Equal proportions of key informants use the area for boating and snorkelling activities (64% each) as well asscuba diving and for work (55%). Only a minority (27%) of people are involved in Cruise Terminal activities, the promotion of sustainable use of the area and whale watching in the CLNP. No one engages in fishing with the CLNP (Figure 4).
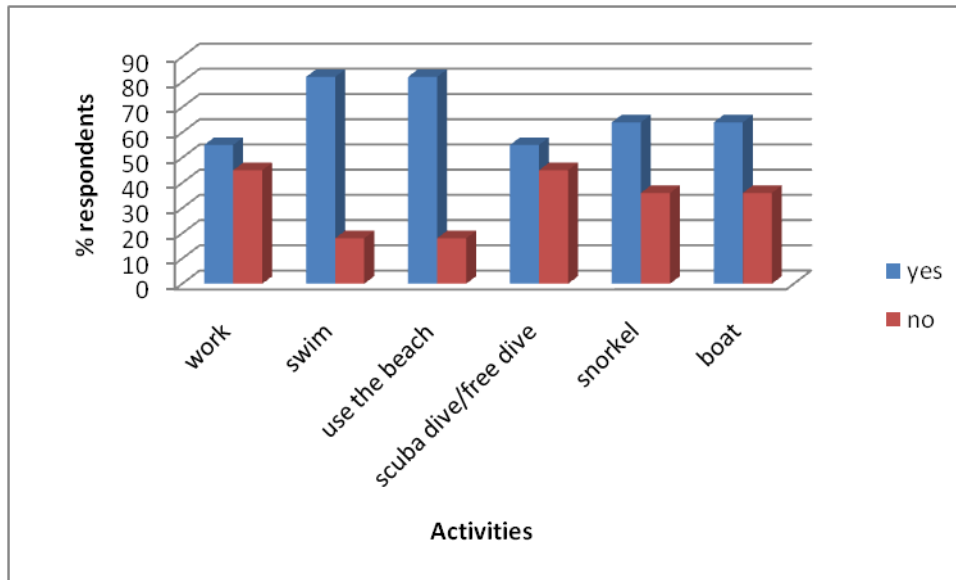
Figure 2 Activities within CLNP boundaries

Frequency of use of the CLNP varied among key informants with equal proportions engaging in activities in the CLNP every day of the week or just one day per week (45% in both cases). There is a lower frequency of usage of the area five days per week (9%).

Key informants perceive that the most common ways to make money in CLNP are in water sports (91%), diving (82%) and tourism through the operation of hotels and resorts (82%). It should be noted that even though fishing is illegal in the Park, it was mentioned by three individuals as one way of earning money in the area (Figure 3).
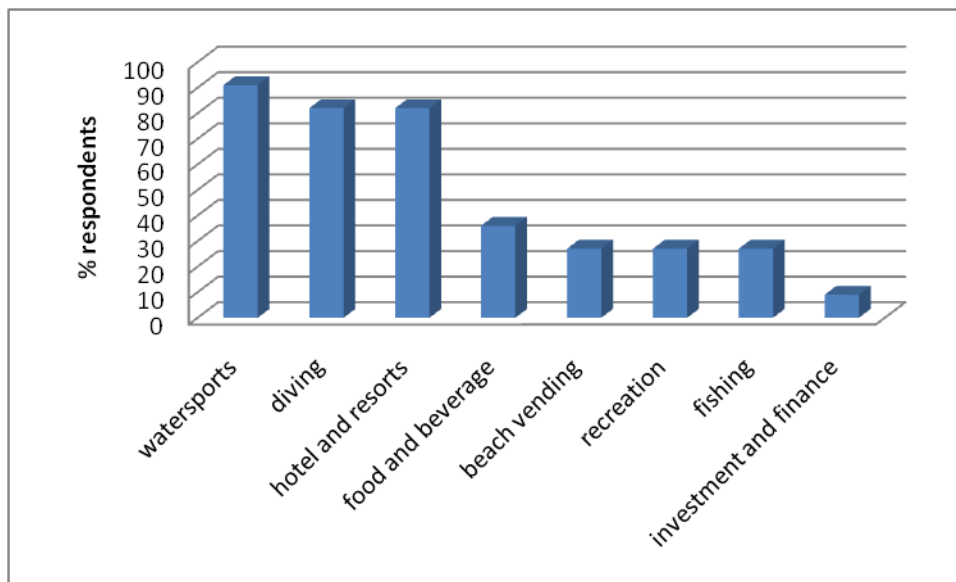
Figure 3 Ways in which people earn a living in the CLNP

Perceptions of the impact of onshore physical development along the CLNP on how people earn a living were divided among key informants with the majority (45%) indicating it had a mixed impact (positive and negative) while 36% thought it had a positive impact. Those who thought the impact on earning a living was mixed stated that "no major benefit to TCI Islanders has been realised"; "development has potentially created more jobs but has also potentially created more abuse of resources"; "[a] holistic approach to development is required [since] makeshift development threatens the image [of the TCI]"; "Cockburn Town was designed to produce salt, which was fine 200 years ago, but today that history makes the area less than ideal for modern tourism"; and "it can be better." In terms of the positive impacts of physical development on earnings, key informants noted that, "it has provided economic empowerment to the Belonger population"; "more people earn a salary due to more jobs"; and "development brings economic benefits to the people."

3.1.3 PERCEPTIONS OF CONDITIONS OF, AND THREATS, TO NATURAL RESOURCES

The semi-structured interview indicated that all key informants believe that none of the resources of the CLNP 10 years ago were in very bad or bad condition. Generally fairly significant proportions of individuals (> 25%) thought resources were in 'good' or 'very good' condition. Higher proportions of key informants gave CLNP resources a 'very good' rating over that of a 'good rating'. Fish populations (73%), other marine life (64%), coral reefs (63%) and beaches (54%) were rated as being in either 'good' or 'very good' condition 10 years ago. Although some persons thought mangroves (36%) and seagrass beds (27%) were healthy ('good' and 'very good' combined) in the past, similar proportions of persons (36% for each) were unsure as to the condition of these resources. This was especially so in the case of seagrass beds where 63% of people combined believed that they were 'neither in good or bad condition' or 'didn't know' the condition they were in. The highest proportion of key informants (55%) was indecisive about the water quality in the Park in the past (Figure 4).
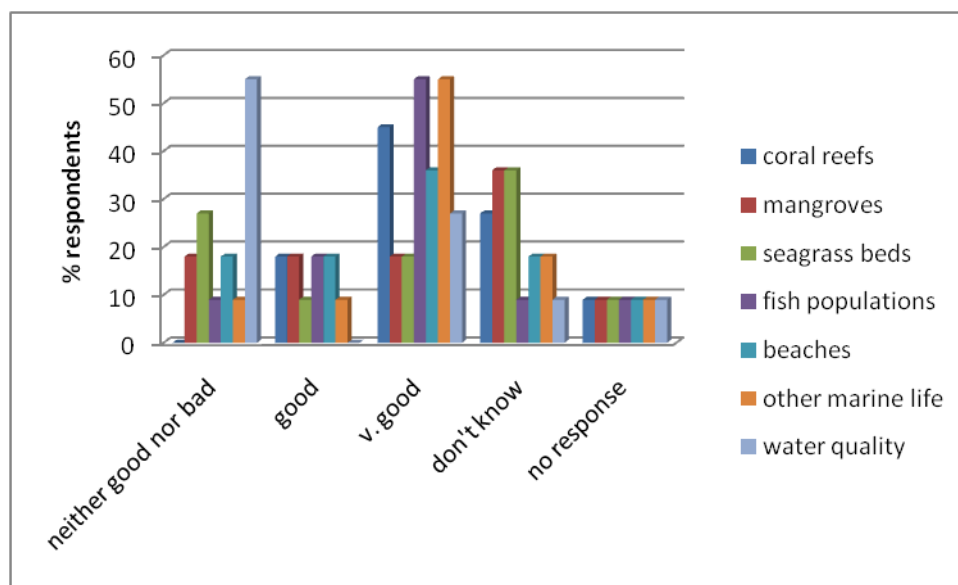
Figure 4 Perceptions of past conditions of CLNP resources

Perceptions of current conditions of CLNP resources differ from past conditions. Whereas none of the resources were thought to be in a 'bad' or 'very bad' condition in the past, interview results indicate this is not the perception today with fairly significant proportions of individuals rating coral reefs and fish populations (27% each) as being in 'bad' and 'very bad' condition combined. Other marine life (18%) and seagrass beds (9%) were also perceived to currently be in a 'bad' condition, albeit by a minority of persons. Additionally, a shift in rating category was also observed with significantly lower proportions of key informants perceiving CLNP resources to currently be in a 'very good' state as compared with 10 years ago.

Water quality (72%), seagrass beds (63%), reefs (54%) and beaches (54%) were rated by most persons as the healthiest (in 'good' and 'very good' condition) of all resources currently in the CLNP (Figure 5). Most people (45%) rated fish populations as 'neither good nor bad' (Figure 6). In general key informant perceptions of water quality and seagrass bed condition were observed to increase; reef, marine life and fish population condition decreased; whereas beaches and mangrove condition remained the same over the years. Water quality condition was thought to increase most significantly over the years whereas health (abundance and diversity) of fish populations was perceived to have declined most significantly from 10 years ago to the present. Perceptions of beach and mangrove conditions remained the same.
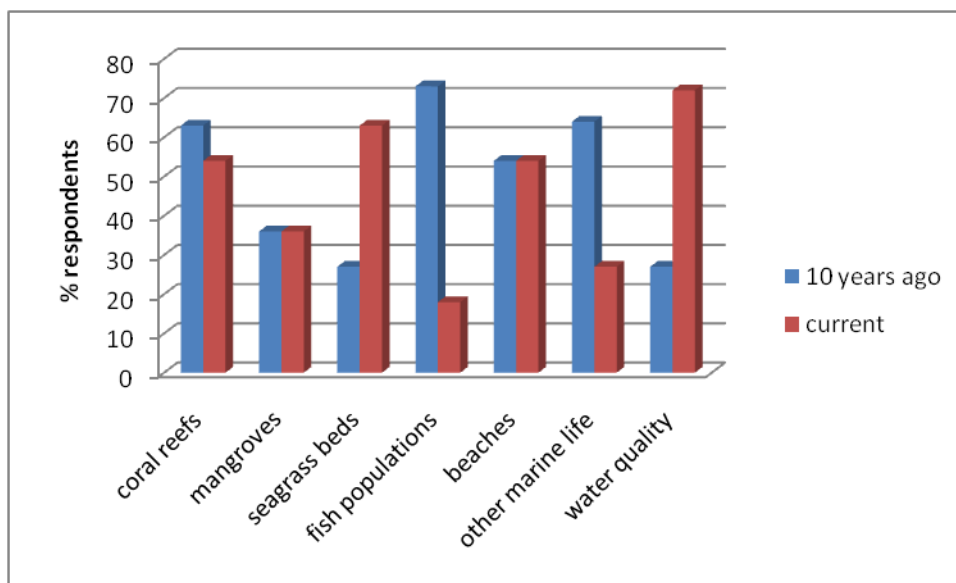
Figure 5 Past and current CLNP resource condition rated as 'good' and 'very good' combined
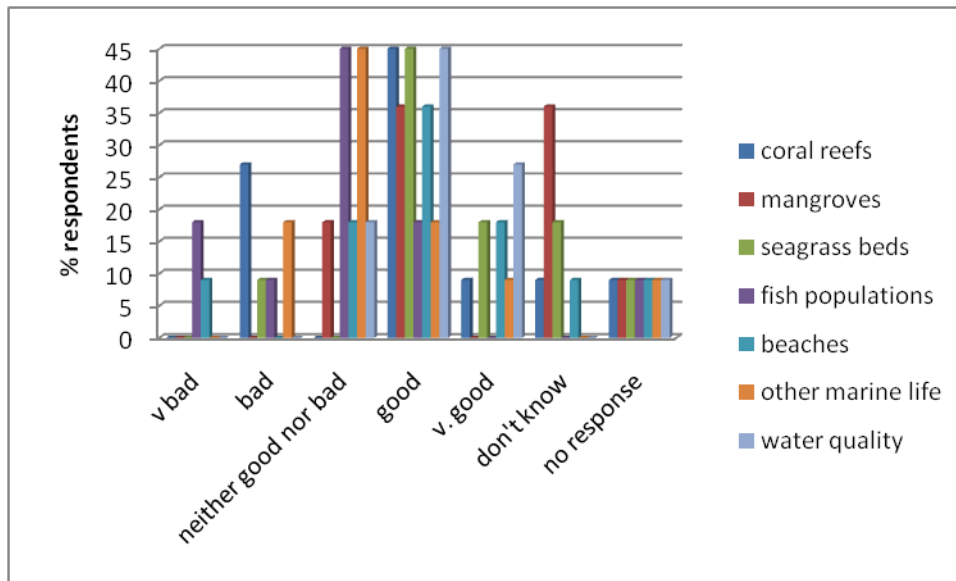
Figure 6 Perceptions of current conditions of CLNP resources

Similar to key informants, focus group participants were asked to compare the current conditions of CLNP resources compared with 10 and 20 years ago. Participants were asked to rate the resource condition as 'bad', 'moderate', 'good' and 'excellent'.

Overall, members of the focus group perceive a decline in the condition of fish and other marine life, coral reefs and beaches within the CLNP over the past 20 years (Table 2). No change in water quality was perceived by the focus group with the general consensus being that it remained in good condition since 1994. This was attributed to the fact that there has been limited coastal development in the area over time.

Of all the resources examined, fish population abundance in the CLNP was thought to have experienced the most significant decline in condition being rated as 'excellent' 20 years ago and 'moderate' currently. Two main reasons provided for the decline were invasive species, such as lionfish (*Pterois spp.*) and illegal fishing in the park.

Coral reefs are thought to have declined steadily since 1994 with the focus group rating their condition as 'good' at that time compared with 'bad' today. The deterioration in coral reef condition was attributed to coral bleaching, user pressures, and the impacts of anchoring and mooring.

Beaches were considered to be only in 'moderate' condition 20 years ago and were perceived to be in a 'bad' condition since 2004 due to littering and restricted beach access.

Table 2 Focus group perceptions of resource conditions in the CLNP

Conditions	Now*	10 years* ago	20 years* ago	Reason
Fish	2	3	4	Invasive species Illegal fishing
Coral reefs	1	2	3	Coral bleaching User pressures Anchoring and mooring on reefs
Other marine life	Manta: 1	Manta: 3		Global fishing pressures
Beaches	1	1	2	Littering Beach access
Water quality	3	3	3	Limited coastal development.
Income / Economy	2	2	2	Grand Turk's economy remains relatively stable.
Population	4800 – 7000 (according to last census)	About the same	About the same	

*Scores are based on consensus or average of focus group opinion where 1 = bad; 2 = moderate; 3 = good; 4 = excellent.

Ten perceived threats to resources in the National Park were provided by key informants (Figure 7). The top three threats mentioned were climate change (64%), illegal fishing (45%) and beach erosion (36%).
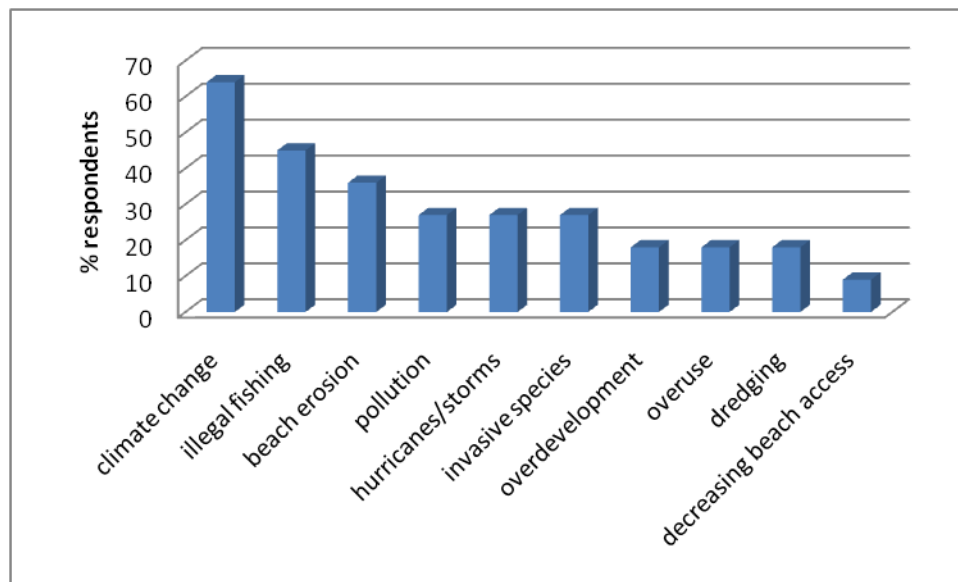
Figure 7 Perceived threats to CLNP resources

3.1.4 PERCEIVED COMMUNITY PROBLEMS

The majority of key informants interviewed rated improper trash disposal (63%), improper sewage disposal (60%) and illegal physical development (50%) as very significant and significant issues to users and communities within and adjacent to the CLNP (Figure 8).
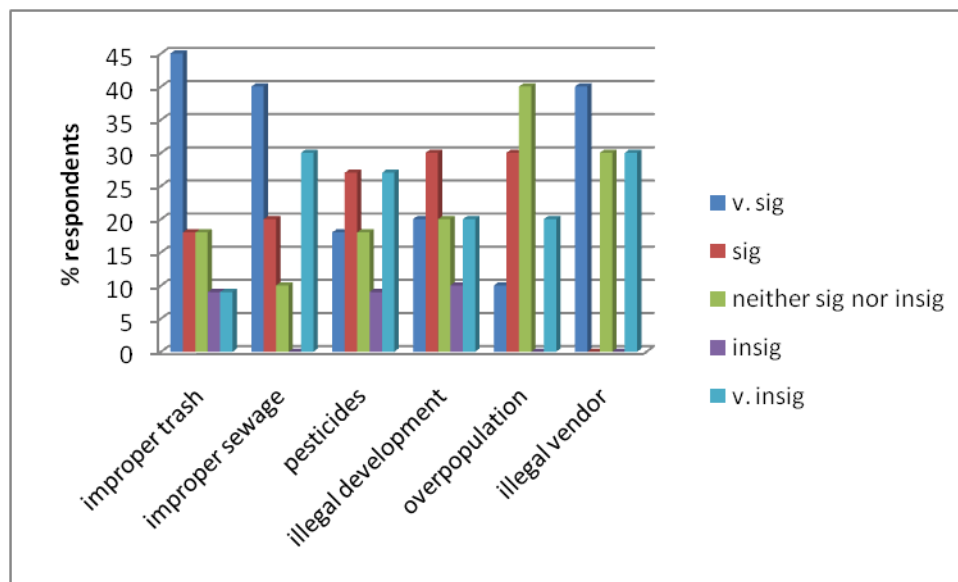
Figure 8 Perceived significance of user and community problems

The focus group identified a number of issues affecting the park. Their concerns included lack of enforcement of park regulations, lack of resources for DEMA, educational needs in the public, jet ski operation, illegal tour operators, trash and mooring violations.

Perceptions of the impact of onshore physical development along the CLNP on how people earn a living were divided among key informants with the majority (45%) indicating it had a mixed impact (positive and negative) while 36% thought it had a positive impact. Those who thought the impact on earning a living was mixed stated that "no major benefit to TCI Islanders has been realised"; "development has potentially created more jobs but has also potentially created more abuse of resources"; "[a] holistic approach to development is required [since] makeshift development threatens the image [of the TCI]"; "Cockburn Town was designed to produce salt, which was fine 200 years ago, but today that history makes the area less than ideal for modern tourism"; and "it can be better." In terms of the positive impacts of physical development on earnings, key informants noted that, "it has provided economic empowerment to the Belonger population"; "more people earn a salary due to more jobs*"; and "development brings economic benefits to the people." None of the key informants indicated physical development had had a negative impact on the way people earn a living in the CLNP; and only two persons did not respond to the question.

3.2 TO EVALUATE THE LEVEL OF STAKEHOLDER AWARENESS AND COMPLIANCE WITH PARK REGULATIONS AND THE ENFORCEMENT OF THEM

Awareness of regulations and policy regarding activities in the CLNP was high among key informants with the majority, in all cases, knowledgeable about such. All persons interviewed were

aware that fishing is illegal in the Park. Equal proportions of persons were aware of regulations and policy relating to hotel development and boating (91%). Eighty-two percent of key informants were knowledgeable about watersports regulations. When compared with awareness of rules and regulations relevant to other activities, generally people were least aware of rules and regulations pertaining to mangroves, albeit, awareness was still high among key informants (64%). Just over a quarter of those interviewed (27%) believe there are no regulations governing activities related to mangroves. Nine percent of key informants in each case did not know about regulations and policy regarding watersports, mangroves and boating activities in the CLNP (Figure 9).
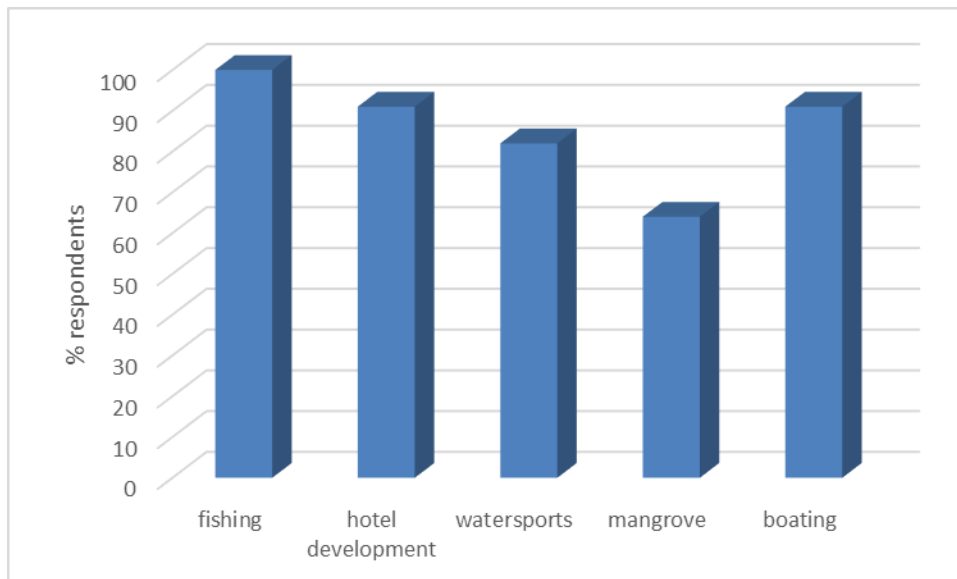
Figure 9 Awareness of regulations and policy governing activities in the CLNP (n = 11)

The focus group indicated a similar level of awareness to that of key informants regarding regulations and policy governing activities in the CLNP. This is highlighted below:

- The beaches are public; water sports operators can operate freely in allocated area.
- No fishing in the National Park.
- No anchoring on coral reef, or vessels greater than 60ft.
- Operators must have a mooring permit to install moorings.
- Illegal use of dive moorings.
- No jet skis in the National Park.
- Only water ski in allocated zone.
- Speed limited to 20 mph.

However, in contrast to the key informants, level of awareness with respect to regulations regarding hotel development and mangroves was not apparent from the discussion at the focus group meeting.

Of the regulations and policy the focus group was aware of, they believed that policies regarding jet ski use and speed limit are those that people would take seriously. See responses below:

- Enforcement can be implemented if people are aware of what the regulations/policies are
- No jet skis in National Park

16

- Only water ski in allocated zone
- Speed limited to 20 mph

Most respondents believe that people are only moderately compliant with regulations and policies relating to the CLNP. A minority of people believe that people are either minimally compliant (18%) or fully compliant (9%). No one thought people to be non-compliant with regulations for the CLNP.
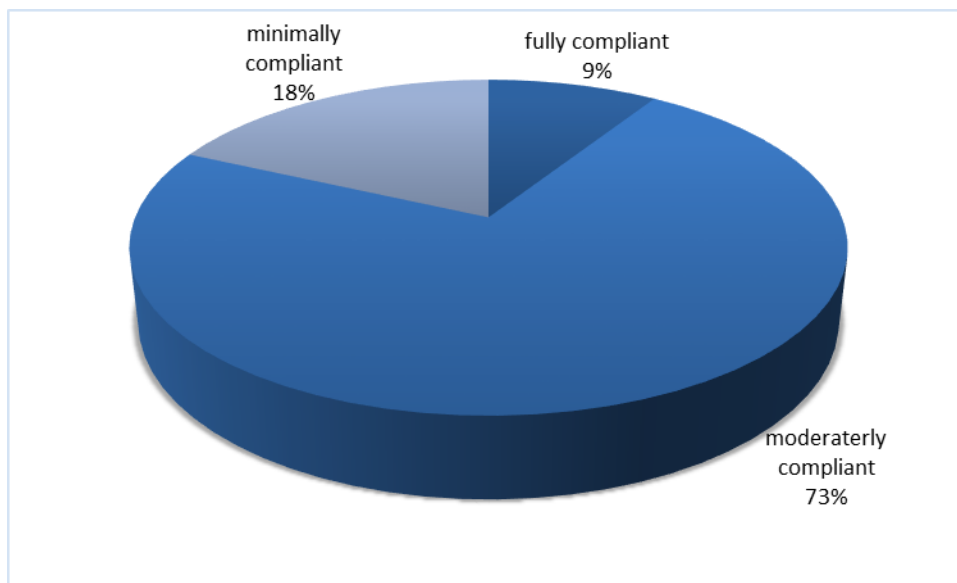
Figure 10 Perceived compliance with regulations and policy (n =11)

The focus group provided numerous suggestions of ways in which compliance with regulations and policy could be improved within the Park. These included:

- Inspection of moorings paid for at least once a year.
- More support from DEMA for maintenance of dive moorings.
- Better communication between DEMA and operators i.e. monitoring statistics, water temperatures, health of reefs, data on bioreef.
- Review of zones i.e. anchor zone, swim zone (more operators now).
- Make more resources available to DEMA (training, officers for regular policing).
- Police park better.
- Expand park to include Salt Cay or declare it a National Park.
- Fines for littering.
- Reduce corruption.

Regulations are generally considered by the majority of key informants to be poorly enforced or not enforced at all (80% combined) while a minority of persons (20% combined) believe they are satisfactorily or well enforced. No one thought regulations were 'ideally' enforced (Figure 11).
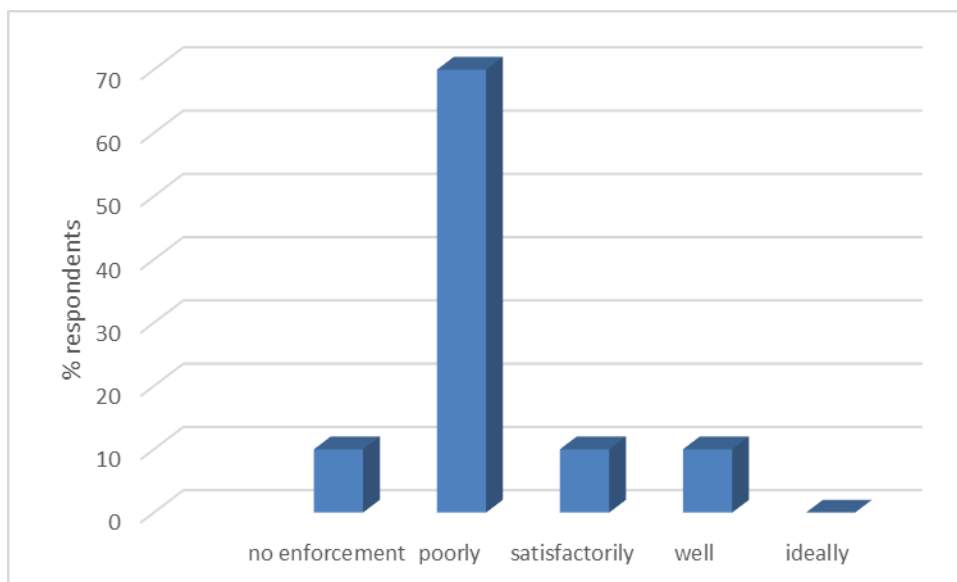
Figure 11 Perceptions of level of enforcement of rules and regulations (n = 11)

Reasons for rating enforcement as 'poorly enforced' or 'not enforced' included "do not have much of a presence of enforcement"; "because of the obvious and blatant violation of regulations and lack of enforcement"; "lack of manpower and trained officers"; "lack of manpower and other resources to carry out such a task,overwhelming need for staff of responsible agency, urgent assistance needed"; "lack of education programmes for users, not enough hands on enforcement, not enough on the water presence for fishing and snorkelling, no regular monitoring of marine stocks"; and "there are insufficient staff/boats/training to provide the needed patrols and supervision." Those who thought enforcement was "satisfactorily enforced" or" well enforced" gave the following reasons for saying so, "I think DEMA does the best it can with the limited manpower and physical resources that it has; however, this should be increased in the future"; and "[regulations and policy are] being enforced but some people are not complying."

A number of ways in which enforcement in the CLNP could be improved were suggested by members of the focus group. These included increasing the number of patrols in the area, increasing DEMA resources and expansion of the area of the Park. See below:

- More fishery patrols/policing.
- More resources for DEMA.
- Higher staff levels on/off-shore.
- Increased fines and boat confiscations.
- Expand Park to include Salt Cay, or declare Salt Cay to be its own National Park.
- Increased presence by DEMA.
- Voluntary Park Wardens.

3.3 TO DETERMINE STAKEHOLDER CAPACITY AND WILLINGNESS FOR COLLABORATION IN CLNP STEWARDSHIP AND MANAGEMENT

The Department of Environment and Maritime Affairs was rated the highest in terms of capability at managing the CLNP. The majority of key informants believe DEMA is 'capable' or 'very capable' (70% combined) of CLNP management. In fact of all stakeholders or organisations analyzed, DEMA was the only organisation to be rated as 'very capable' by the majority of respondents (50%). Only a minority of those interviewed (between 10 to 20%) perceive some of the other organisations and stakeholders to have this level of management capability. Hoteliers, NGOs and watersports operators are also perceived to have significant levels of management capability being rated as 'capable' and 'very capable' (60% in each case for the first two, 54% for the latter). Even though fairly high proportions of persons feel residents (40%) and the TCI Tourist Board (30%) are 'capable' and 'very capable' at managing the Park, similar proportions (40% each) believe they are only 'somewhat' capable of doing so. With the exception of DEMA and NGOs, a minority of key informants thought all other stakeholders and organisations were 'not capable' of CLNP management (Figure 12).
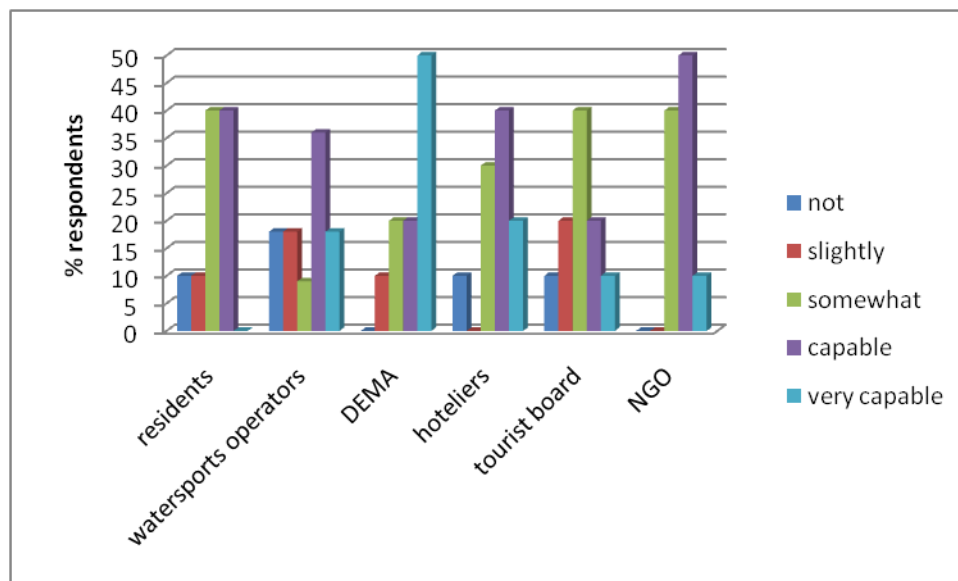
Figure 12 Perceived CLNP management capability of stakeholders and organisations

The overwhelming majority of key informants (91%) feel a sense of stewardship for the CLNP with 89% of them participating in stewardship activities such as public beach and public area trash clean-ups; public awareness; submission of dive and fish statistics; reporting of illegal activities to authorities; and service on public boards. Again, the majority of key informants (91%) indicated they would be willing to increase their personal stewardship, while one key informant did not know.

Recognizing the need for improved enforcement and monitoring, the focus group, in general, was very eager to develop a volunteer park warden programme. Some attendees offered to develop brochures and educational materials. Most suggested that they would participate in regular clean-up activities, and dive operators indicated they would like to conduct reef monitoring and lionfish

removal, if training were provided. Most were also very eager to participate in DEMA's proposed Community Conservation Partner Program, which will offer incentives in the form of certifications and promotions for stewardship activities.

Overall the highest proportions of key informants believe that watersports operators, dive operators, hoteliers, service clubs and statutory bodies interact 'well' and 'ideally' with DEMA with the dive operator-management body interaction rating the highest (88%) for these categories of interaction combined. Interactions between DEMA and fishers need to be improved, since it was rated highly ("well" and "ideally") by the lowest proportions of key informants. A large proportion of key informants (40%) believe the interaction to be "very poorly" or "poorly" (Table 3).

Table 3 Perceived stakeholder interaction with DEMA (% key informants)

Interaction with DEMA	Very poorly	Poorly	Satisfactory	Well	Ideally
Watersports operators	9	9	18	55	9
Fishers	10	30	40	20	10
Dive operators	0	0	11	44	44
Hoteliers	0	10	40	30	20
Service clubs	0	22	33	22	22
Statutory bodies	0	10	30	30	30

The overwhelming majority of key informants believe all stakeholder groups have an 'important role' or responsibility to play in reducing the negative impacts of activities on the natural resources of the Park. Of all the stakeholders, residents were thought to have less of an 'important role' in impact reduction, although this level of role was indicated by the majority of persons interviewed (63%); greater than one-third (36%) of persons thought the residents role in impact reduction should only be 'moderate'. Watersports operators were perceived by all key informants to have this responsibility. Fishers were the only stakeholders identified by a small proportion of persons interviewed as having no role in the reduction of impacts in the CLNP (Table 4).

Table 4 Perceived responsibility for impact reduction in the CLNP

Role in impact reduction	None	Minimal	Neither minimal nor moderate	Moderate	Important
Watersportsoperators	0	0	0	0	100
Fishers	9	0	0	0	91
Dive operators	0	9	0	9	82
Hoteliers	0	9	0	18	73
Service clubs	0	9	0	18	73
Statutory bodies	0	9	0	0	91
DEMA	0	9	0	0	91
Other government organisations (Marine Police, Planning, EHD)	0	9	0	9	82
Residents	0	0	0	36	63

3.4 TO ASSESS TRENDS IN THE EXTENT TO WHICH DEMA IS CONTRIBUTING TO THE ACHIEVEMENT OF NATIONAL MARINE PARK GOALS

The majority of people interviewed (65%) perceive a lack of human, financial and other resources to be the major problem facing management of the CLNP. These resources were identified as staff, manpower and equipment for management and enforcement. Illegal fishing, uncontrolled and unlicensed watersports activities in the Park, and a lack of public education about the Park were also identified as management problems albeit by a small proportion of key informants (12% each).
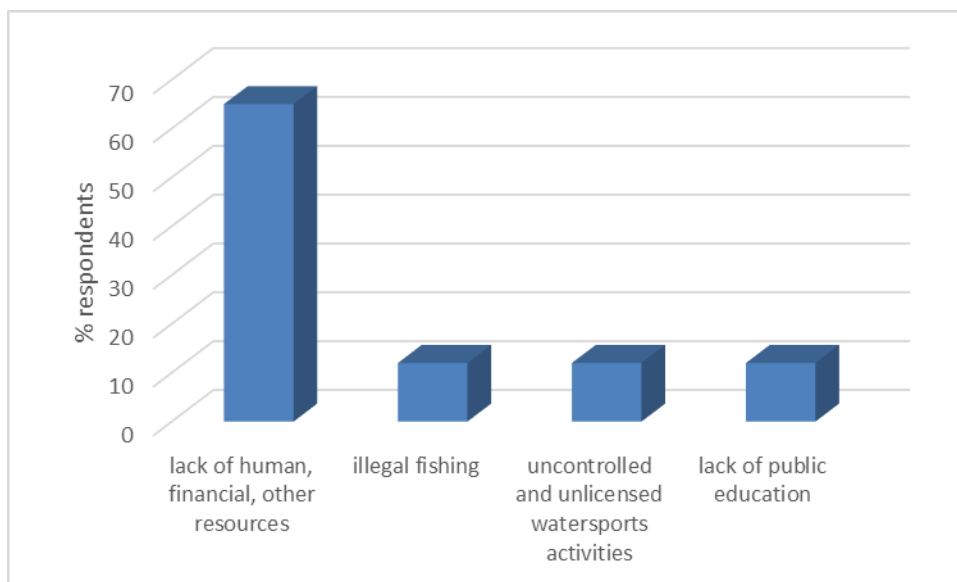
Figure 13 Perceived CLNP management problems (n = 17)

Increased funding and staff resources was the most commonly suggested solution to CLNP management problems. Key informants suggested that DEMA should lobby the TCI government for an increased budget to undertake management activities (27%). Additionally it was thought that more DEMA staff were required for management of the CLNP. Increased patrols within the CLNP to enforce regulations and policy; training of DEMA officers and a change in their attitude; development of educational materials in school curricula to include information on local marine parks and public awareness; and sharing enforcement, monitoring and surveillance equipment with other TCIG agencies were thought to also be solutions to management problems. A minority of key informants thought that willing staff members should be recruited for management; implementation of community service *in lieu* of fines for violation of park regulations; as well as the clear definition of park boundaries were all thought to be solutions to CLNP management (Figure 14).
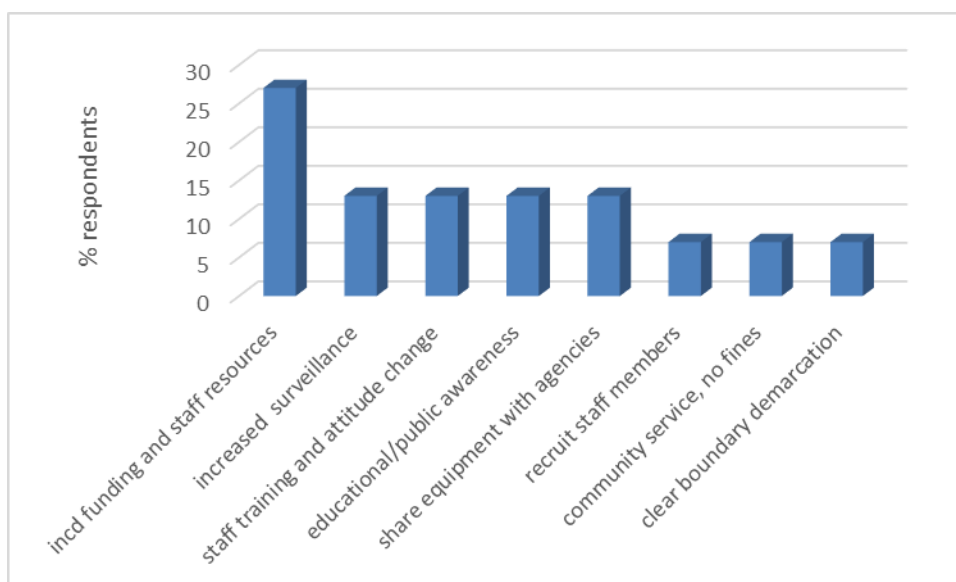
Figure 14 Perceived solutions to CLNP management problems (n = 15)

Perceived management effectiveness of DEMA varied across management objectives with significant proportions of key informants rating it as 'neither good nor bad', 'good' or 'bad'. The management and protection of fishery stocks, and protection of naturally and culturally significant areas were thought to be 'good' by greater than one-third of the key informants (40% and 36%, respectively. Most persons interviewed thought DEMA's management efforts at keeping the Park in as natural a state as possible (55%), and managing the way in which people use the Park (45%) were 'neither good nor bad'. Over half of the key informants combined believe that DEMA's management efforts at preventing inappropriate uses or activities of the area are 'bad' or 'neither good nor bad.' It should be noted that with the exception of a small proportion of individuals who thought DEMA was very effective at achieving this management objective, the management body received no 'very good' management effectiveness ratings (Table 5).

Table 5 Rating of perceived management effectiveness of DEMA (% key informants)

Management effectiveness	v. bad	bad	neither good nor bad	good	v. good
Protection of naturally & culturally significant areas	9	27	27	36	0
Keeping the park in as natural a state as possible	9	9	55	27	0
Managing and protecting the fishery stocks	10	30	20	40	0
Managing the way in which visitors use the park	9	18	45	27	0
Prevention of inappropriate uses or activities in the park	9	27	27	18	18

Key informants indicated a number of activities that are currently occurring in the CLNP they would like to see addressed by DEMA. Below is a summary of their responses:

- Illegal fishing and use of spear guns

- Managing users and user impacts
- Focus on ecological conservation
- Water quality
- Control of horses and other animals
- Illegal vendors
- Unlicensed water sports operators
- Beach sand removal
- Monitoring and regulation of snorkel and dive group activities

Similar issues were identified by members of the focus group. Primary issues identified included the lack of enforcement and fishing patrols, feeding of wildlife and inappropriate mooring in the Park.

3.5 DEMOGRAPHIC INFORMATION

All key informants were male with the majority (40%) in their 40s. Persons interviewed were within the age range of 35-59. Of all the key informants interviewed, 82% were TCI Belongers and 18% were US citizens. All have been resident in the Turks and Caicos Islands for over 30 years (between 35 to 59 years), with the exception of one US citizen who has been in the TCI for 1.5 months. Most persons interviewed (46%) had a university-level education (Figure 15). Just over a quarter of all persons interviewed (27%) are involved in the dive and watersports sectors while equal proportions of persons hold managerial and government positions or work for themselves (18% each), or are involved in the marine and hospitality sectors (9% each). See Figure 16. Key informants have been involved in their current occupations for between 1 to 30 years.
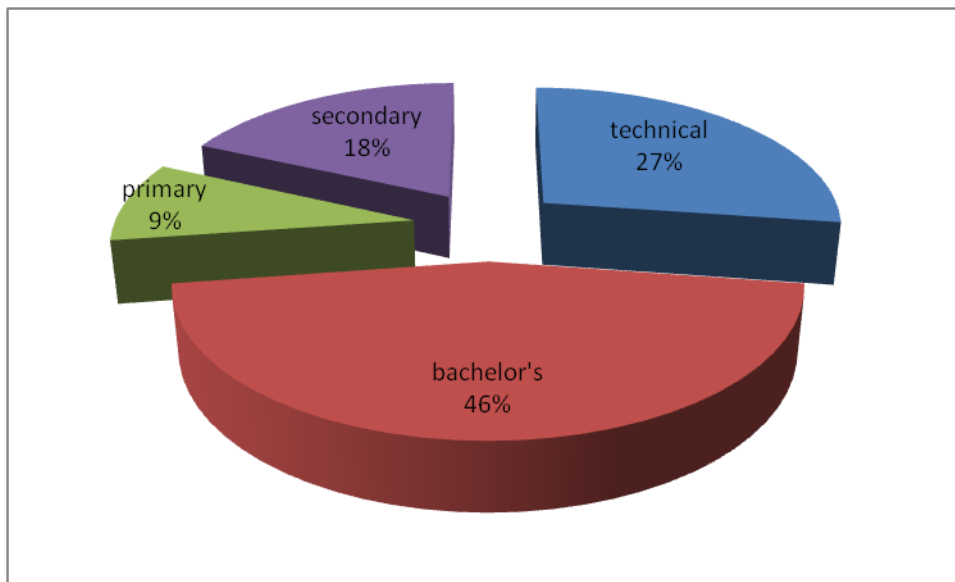
Figure 15 Level of education of key informants (n = 11)
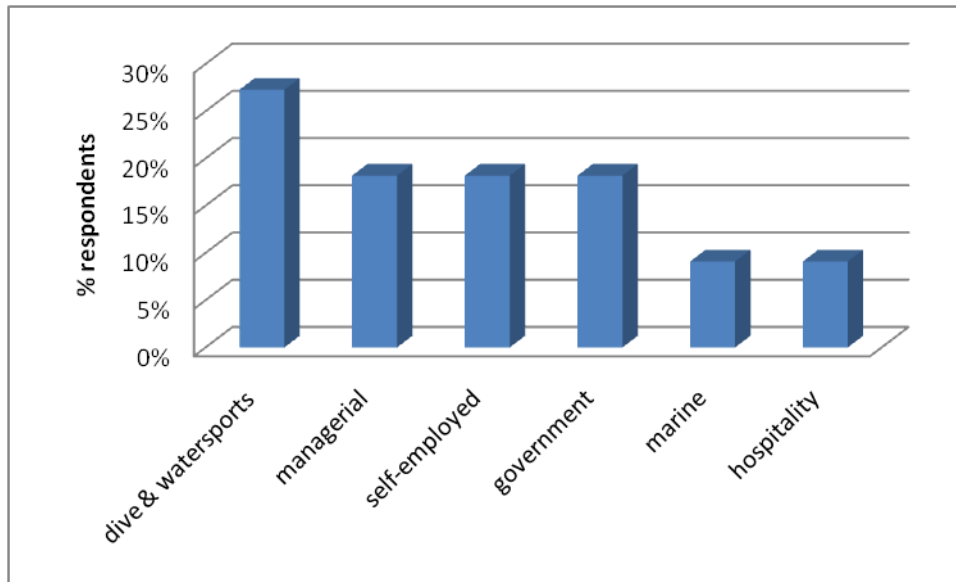
Figure 16 Current job of key informants

4 DISCUSSION AND CONCLUSIONS

4.1 ASSESSING THE USES OF THE NATIONAL MARINE PARK AND IDENTIFICATION OF THREATS AND PROBLEMS TO NATURAL RESOURCES

Overall people have good knowledge of the CLNP, specifically in terms of the extent of park boundaries. This is indicative of successful awareness-raising efforts conducted by DEMA in previous years when the department was adequately fundedt. Regular coastal cleanup campaigns continue to be conducted, which raise awareness regarding Park boundaries, while simultaneously fostering a sense of public stewardship for the park. This high level of awareness about the Park will aid in the successful management of the area through support from the community.

The National Park is used regularly, up to seven times a week primarily for recreation(swimming and use of the beach) and as a means of earning a living by a diverse group of people. Those who earn a living from the Park do so mainly through watersports and diving activities, and tourism. Due to this high dependency on the area, management interventions have the potential to significantly impact a fairly significant number of persons in Grand Turk. Special consideration of this should be made and DEMA should make every effort to involve the community in management decisions. In early 2014, DEMA launched a Community Conservation Partner Programme. The programme promotes stakeholder-based stewardship of TCI's natural resources. Since the launch, several stakeholders have participated in developing educational materials for the Park, in addition to providing DEMA with dive statistics and lionfish data.

It should be noted that even though fishing is illegal in the CLNP, it was mentioned by a minority of persons as a means of earning a living. This is not an awareness problem but rather an enforcement issue.

Physical development has been perceived by most as having both positive and negative impacts on the area. It has been seen as a means of job creation and economic empowerment on the one hand but has led to the degradation of natural resources on the other. For example, it is anecdotally believed that increased visitor traffic on snorkelling reefs has resulted in significant damages. Furthermore, the development of the GTCC required significant dredging and blasting through an area of coral reef that included two dive sites. Due to an economic downturn in recent years, the thrust for development has increased, as development is believed to be a solution for economic problems. DEMA should work with relevant regulating bodies to ensure that a balance between development and sustainable management of natural resources is maintained.

Conditions of most natural resources in the Park were generally perceived as being good or very good in the past with declines in some resources noted for 2013. With the exception of fish populations and other marine life, CLNP resources are thought to currently be in good condition.A Future of Reefs in a Changing Environment (FORCE) survey of the reefs indicated that some declines, in terms of algal overgrowth and reduced fish abundance were observed on CLNP reefs. Overall, the reefs were rated as being in good condition. Healthy and diverse grouper populations were also noted for TCI reefs.Those who believed these resources are in very bad or bad condition were people involved in the dive industry who had been working in the sector within the CLNP for at least 20 years. Therefore their perceptions of the changes in conditions of these resources would be expected to be more accurate than those not as familiar with them.

In general water quality and seagrass bed condition were perceived to increase; reef, marine life and fish population condition decreased; whereas beaches and mangrove condition remained the same over the years. Water quality condition was thought to increase most significantly over the years whereas health (abundance) of fish populations was perceived to have declined most significantly from 10 years ago to the present. Perceptions of beach and mangrove conditions remained the same. Focus group perceptions were similar to those of key informants, with most believing that environmental conditions have declined over the past 20 years. The exception to this perception is water quality. The focus group felt that water quality has been consistently good for the past two decades. A pollution task force, formed in the early 2000's, was able to improve outward signs of water quality by improving the flushing capacity of inland salinas (salt ponds), thus reducing associated odours; however, in reality this may have increased nutrient and other pollutant loads in CLNP, as the open ocean is where the salinas are now being flushed to. Public perceptions may be skewed by the reduced odor, rather than by actual data. DEMA has not had the capacity or resources required to test water quality in several years. Due to small populations and a lack of high-density coastal development, however, coastal water quality continues to be very good, so public perception is not misplaced.

The perceived decline in fish and marine life populations is thought to be due to invasive marine species such as the lionfish and illegal fishing in the Park.Coral bleaching, heavy use of reefs, and anchoring and mooring impacts have all contributed to the deterioration in reef condition perceived by persons.

Climate change, illegal fishing and beach erosion pose the greatest threats to the natural resources of the CLNP.A new Turks and Caicos Building Code, which factors in building resilience to climate change has been approved by Cabinet and is awaiting ratification. DEMA is also partnering with a

newly created Fishers' Co-op to help empower fisherfolk and foster a sense of ownership and stewardship for fisheries resources. Beach erosion is a long-standing problem along CLNP coastal areas. A comprehensive analysis of coastal dynamics and recommended shoreline stabilization methods is needed.

4.2 EVALUATION OF LEVEL OF STAKEHOLDER AWARENESS AND COMPLIANCE WITH PARK REGULATIONS AND THE ENFORCEMENT OF THEM

Generally there seems to be a high level of awareness among persons of laws and regulations governing the CLNP but more so those relating to persons own activities within the area. This may be attributable to the fact that, due to the cruise ship industry, a majority of residents are employed in a tourism sector that is heavily dependent upon the CLNP. These perceptions are supported by the interview and focus group meeting results which indicated that people generally had good knowledge of existing regulations and policy relating to activities in the Park. It should however be noted that knowledge of regulations and policy regarding mangrove use was not as high among key informants as for other ecosystems and activities. This was similar to the focus group results in which there was found to be no awareness at all of regulations governing mangroves and hotel development. Level of awareness of MPA regulations and policy is key to developing awareness programs and engaging stakeholders in participation in management. If communities are not aware of the existence of regulations, as is the case for mangrove use and hotel development in the CLNP, then it will be difficult to engage them in coastal management. Education is critical for improving compliance in the CLNP. In further educational efforts, DEMA needs to pay particular attention to regulations pertaining to mangroves and hotel development in the area, while reinforcing policy related to other activities and resources.

Although there is a perceived high level of awareness of these regulations within the Park, compliance with Park regulations is generally believed to be moderate as there is thought to be only some enforcement of such regulations due to limited enforcement visibility and continued violations. While it was noted that there have been some efforts by DEMA to enforce laws, the department is thought to lack sufficient resources to achieve adequate enforcement. Currently DEMA has only one enforcement officer on the island of Grand Turk, and an aging patrol vessel is more-frequently out of service than in-service. More management resources must be dedicated to enforcing Park regulations and engaging the public in management of the area in order to improve compliance.

4.3 DETERMINATION OF STAKEHOLDER CAPACITY AND WILLINGNESS FOR COLLABORATION IN CLNP STEWARDSHIP AND MANAGEMENT

DEMA is seen as being the most capable organisation at managing the CLNP. It is important to note however that fairly significant proportions of persons think that other organisations and stakeholders such as hoteliers, NGOs and watersports operators also have fairly high levels of management capability. People therefore believe these organisations have some level of responsibility and stewardship for the Park. DEMA should therefore examine the potential for engaging these groups of stakeholders in decision-making and management of the Park. There is some uncertainty among persons regarding the capability of local residents and the TCI Tourist

Board to manage the CLNP. However, all stakeholders who depend on and use the CLNP have a stake in its management and should be consulted on certain management issues.

There is a high feeling of stewardship for the CLNP among persons with most participating in stewardship activities such as beach and trash clean-ups, public awareness campaigns, participation in monitoring activities, illegal activity reporting and participation on relevant boards. Additionally, there is a high degree of willingness to increase the level of personal stewardship of the area through for example volunteer surveillance of the Park, development of educational material, reef monitoring and lionfish eradication etc. Also, the overwhelming majority of persons believe that all stakeholder groups have an 'important role' or responsibility to play in reducing the negative impacts of activities on the natural resources of the Park. This feedback is very encouraging for DEMA and is indicative that most people understand the importance of and value of CLNP resources as well as have a sense of ownership of the area. With the apparentacceptance of responsibility for sustainable utilization of the CLNP and its resources among persons, DEMA is likely to be successful in engaging communities in management of the area. Given DEMA's limited human resources, the engagement of community persons in certain management activities will be beneficial to the effective management of the CLNP. The greater the stakeholder participation in management and stewardship of the MPA, the greater the support will be for the area.

Interaction between DEMA and stakeholder bodies is generally perceived to be good, although the interaction between fishers and the management body could be improved. A Fishers' Co-op has recently been established in Grand Turk, and DEMA is working with the group to improve communication and to foster mutual benefits between fishers and the Department.

Frequent and good interaction with stakeholders is important in building strong relationships for achieving management objectives and should be sustained to improve and adapt management. Interaction encourages stakeholder participation in management of MPAs and can improve the success of MPAs. Stakeholders can be potential partners or threats to MPAs. If stakeholders feel their views and concerns are being considered by the management body and feel a sense of ownership of it, they are more likely to support and sustain the MPA. There are various means by which these interactions can occur including informal and formal meetings, one-to-one discussions with management personnel etc. DEMA holds regular town hall meetings with stakeholders and engages regularly in one-on-one communications with CLNP stakeholders.

4.4 ASSESSMENT OF TRENDS IN THE EXTENT TO WHICH DEMA IS CONTRIBUTING TO THE ACHIEVEMENT OF NMP GOALS

CLNP management is thought to be primarily hampered by a lack of resources (human, financial and equipment) followed by illegal fishing, uncontrolled and unlicensed watersports activities and operators, and lack of public education about the Park. It was noted that efforts at increasing the budget of DEMA to carry out its management activities, increasing patrols of the Park and development of educational materials would be key to achieving CLNP management objectives. This sentiment is reflective of reality. With only one enforcement officer and a patrol boat that is usually out of operation, DEMA has practically no enforcement capacity. Ensuring that the department is adequately staffed and provisioned is essential if CLNP management objectives are ever to be met.

The management effectiveness of DEMA in achieving the management objectives of the Park needs to be improved. Overall, DEMA is perceived to be better at the management and protection of fishery stocks, and the protection of naturally and culturally significant areas than keeping the park in as natural a state as possible, managing visitor use, and prevention of inappropriate activities. This preliminary evaluation of the management effectiveness of DEMA is important to the department in terms of improving and adapting management of the area. While DEMA lacks the resources necessary to effectively fulfil its mandate, CLNP stakeholders have demonstrated a willingness to undertake many required stewardship activities themselves. A concentrated effort of working with stakeholders to achieve effective management may be the only course of action available to improve management until needed resources become available for the department. Internal and even external evaluations of the management effectiveness of DEMA conducted on a regular basis may be beneficial in determining management successes and failures and adapting management accordingly.

Numerous activities currently occurring in the CLNP were identified by key informants and focus group participants that should be addressed. Whereas for key informants, none of the issues were highlighted as being more important than others, the focus group highlighted enforcement of park regulations, feeding of wildlife and inappropriate mooring in the Park as major issues that need to be urgently addressed. Each of the issues highlighted by the focus group is certainly cause for concern. The feeding of wildlife, including sharks and rays is a dangerous activity that may ultimately result in an unfortunate accident. As many watersports operators attract guests by promising the excitement of swimming with sharks or swimming with rays, there may be little political will to change this status quo. The legislative framework for feeding wildlife is slim and is limited to Regulation 9(1)(g) of the Fisheries Protection Ordinance, which states:

"No person shall engage in the practice of throwing any food in the water for the purposes of feeding or attracting or harvesting any species of marine life unless authorized to do so by the Director."

However, the above clause can also be interpreted to mean that all fishing using bait is also unlawful. This Regulation is therefore difficult to enforce and needs to be amended.

Dive operators are frustrated that their private moorings, which they pay a fee to install, are used by others who do not pay a fee; however, there is currently no regulative framework in place to address this problem. A committee to review the National Parks Ordinance has been appointed and is expected to address this issue among others in the coming months.

Public awareness would help to improve both of the above management issues.

4.5 AREA DEMOGRAPHICS

The focus group also believed population had remained relatively constant over the same 20 year period; however, the Preliminary Census Report suggests that this perception is incorrect (see section 3.1.2). With the dramatic increase in visitor traffic, resulting from the introduction of cruise ships, it is likely difficult for the resident population to perceive an increase in their own numbers by comparison.

The focus group also believed that income and economy had remained constant over the same period. Economic data indicates that the economy has experienced rapid growth over this period,

although this growth has not been differentiated on an island-by-island basis (Titley, 2010). Anecdotal evidence suggests that the economy of Grand Turk has expanded dramatically over the past 20 years, particularly with the opening of the GTCC. The fact that this economic expansion is not perceived by stakeholders may indicate that the benefits of development have not been distributed equitably across the population.

5 RECOMMENDATIONS FOR MONITORING AND MANAGEMENT

Although dependent on DEMA structure and capacity at the time, it is recommended that the SocMon process is repeated in three years. In the meantime, it has been recognised that improved and increased capacity of the community is crucial in supporting sustained monitoring. In order to do this, community awareness is to be created and possible private sector financial support and collaboration for sustained monitoring is to be developed.

6 REFERENCES

Bunce, L. and R. Pomeroy. 2003. Socioeconomic monitoring guidelines for coastal managers in the Caribbean (SocMon Caribbean). World Commission on Protected Areas, Gland.

Bunce, L., P. Townsley, R. Pomeroy and R. Pollnac. 2000. Socioeconomic manual for coral reef management. Australian Institute of Marine Science, Townsville.

Campbell, J., T. Fisher and F. Perez. 2006. A management plan for the Columbus Landfall National Park and other protected areas in and around Grand Turk. Department of Environment and Coastal Resources, Ministry of Natural Resources, Turks and Caicos Islands. 99pp.

Pena, M. and K. Blackman. 2013. Report of the SocMon Caribbean Training Workshop, 4-13 August, 2013. Socio-economic Monitoring by National Parks in the Turks and Caicos Islands Project Report No. 1. 69pp.

Pena, M., P. McConney and K. Blackman. 2013. Common socio-economic monitoring indicators for Caribbean Challenge MPAs. Gulf and Caribbean Fisheries Institute 65.

TCIG. 1998. National Parks Ordinance and Subsidiary Legislation. Turks and Caicos Islands. Retrieved from http://www.environment.tc/content/root/files/20080812083711-NationalParkOrdinance.pdf.

TCIG. 2012. 2012 Population and housing census – Preliminary report. In:In T. D. o. E. P. a. Statistics (Ed.), (pp. 37). Turks and Caicos Islands: The Department of Economic Planning and Statistics.

Titley, B. 2010. The Turks and Caicos macro-economy and public Finances. Turks and Caicos Islands.

APPENDIX 1SITE MONITORING PLAN

Socio-economic Monitoring atNational Marine Parks in the Turks and Caicos Islands (TCI SocMon)
5-13 August 2013

Site monitoring plan for MPA follow-up study

1. Goal and objectives guiding socio-economic monitoring

Monitoring must have a goal and specific objectives for being undertaken. These are often based on management plans (e.g. fisheries, MPA, tourism) or other expressions of policy.

Monitoring goal
To ensure the regular and ongoing contribution of socio-economic data and information to decisions for the effective management of the Columbus Landfall National Park (CLNP)

SMART objectives for socio-economic monitoring (please be as specific as possible)

Monitoring objectives (Smart, Measurable, Attainable, Realistic and Time-bound)
1.To assess uses of the National Marine Park and identify threats and problems to the natural resources
2 . Evaluate stakeholder awareness of, and compliance with, regulations and policy and their enforcement
3.To determine stakeholder capacity and willingness for collaboration in CLNP stewardship and management, and promote participatory monitoring and evaluation as part of stewardship and management
4. To assess trends in the extent to which CLNP management bodies are contributing to the achievement of NMP goals (objectives).

2. Defining the study area

Using the information on issues and stakeholders, define the geographic area appropriate for the study site (contains all or most critical activities/issues and stakeholders). Document the specific selection criteria that you used. Clearly identifying the study area is important in identifying use patterns and potential threats to resources. The study area should include where the stakeholders live and work.

Study area selection criteria	Study area description (or attach area map)
National Park boundaries	National Park boundaries as outline in National Park Ordinance, including watershed
Fringing reef	

1

Study area selection criteria	Study area description (or attach area map)
Surrounding communities and businesses	for the National Park
Watershed	

3. Stakeholder identification

Stakeholder identification and selecting the boundaries for the study site are iterative processes. Start by identifying the activities in the area and then determine who the likely stakeholders are. Name their organisation, if any.

Study area activity or issue	Primary stakeholder [and organisation]	Secondary stakeholder [and organisation]
Tourism	Hoteliers, GTCC	Tourists, hoteliers, residents
Physical development	Developers/contractors	Residents, tourists, merchants
Residential communities	Full-time residents	Household staff
Recreational activities	Locals and tourists, watersports operators	Support services
Run off and pollution	Hoteliers, yacht owners, residents, landscapers, Department of Environmental Health	Residents, fishermen
Invasive species	Land owners, Department of Agriculture, DEMA, watersports operators, fishermen	Fishermen, tourists, residents

4. Stakeholder locations and key informants

The communities where SocMon will take place will depend primarily on the stakeholders involved in coastal management. Suggest key persons who can talk about the larger populationThe communities where SocMon will take place will depend primarily on the stakeholders involved in coastal management. Suggest key persons who can talk about the larger population.

Stakeholders (1° and 2°)	Location of stakeholder	Key informants for stakeholders
Hoteliers	Cockburn Town	Osprey Beach – Jenny The Arches Salt Raker White Sands Resort Bohio The Manta Ray Guesthouse Island House?

2

Stakeholders (1° and 2°)	Location of stakeholder	Key informants for stakeholders
Developers/Contractors	Grand Turk	Otis Morris John Green Neil Saxton Huntley Forbes Oswald Williams
Grand Turk Cruise Centre (GTCC)	Grand Turk	General Manager
Tourists	Grand Turk	Brian Been (Tourist Board)
DEMA	Grand Turk	Carey Skippings
EHD	Grand Turk	Representative?
Watersports operators	Grand Turk	Everett Freites "Smitty" Mitch Rolling Tommy Skippings
Horseback riding	Grand Turk	Mr. Astwood
Fishermen	Grand Turk	Oscar Talbot
Support services (restaurants, souvenir stores etc)	Grand Turk	The Sand Bar White Sands Margaritaville – Roydoya Alleyne Bohio Bird Cage Salt Raker Herbie Been
Landscapers	Grand Turk	?
HODs (government)	Provo and Grand Turk	DainerLightbourne (Planning) Norman Watts (Public Works)
NGOs and community groups	Grand Turk	National Museum – Pat Saxton Community in Action

5. SocMon team and tasks

Although an initial study or monitoring can be done by a single person (e.g. MSc student), the process is intended to be undertaken by an interdisciplinary team, the size and the required talents of which partly depend on the goal and objectives of the study or monitoring program. What types of expertise do you need and where from?

3

Role on team (or skill requirement)	Specific tasks	Proposed team member name and affiliation
Manager/coordinator	Coordination of project activities	Kathleen Wood
Departmental coordinator	Liaise with SocMon coordinator and organize daily activities of DEMA	Kathleen Wood
Primary data collectors	Field data collection	NaqqiManco Jasmine Parker Rodney Smith Jodi Johnson Carey Skippings
Secondary data collectors	Collect and acquire secondary data	Jodi Johnson NaqqiManco Kathleen Wood Carey Skippings
Key informant interviews	Field data collection for key informants	Jasmine Parker Kathleen Wood Carey Skippings Jodi Johnson
Data collection coordinator	Coordinate field data collection	Kathleen Wood
Translator	Translates when required	Dumy Hilaire
Data entry	Compile data	Jodi Johnson Eric Salamanca Don Stark Zev Cariani Amy Avenant Maggie Wisniewski Jasmine Parker
Data analysis and interpretation	Analyze and interpret data	Eric Salamanca Don Stark Kathleen Wood Jodi Johnson Zev Cariani Amy Avenant Jasmine Parker
Reporting	Report compilation	NaqqiManco

4

Role on team (or skill requirement)	Specific tasks	Proposed team member name and affiliation
		Kathleen Wood
		Amy Avenant
		Jasmine Parker
Public Relations	Communicating results	All team members
Coordinator for public relations	Coordination of public relations	Jasmine Parker

6. Work plan schedule

A SocMon study should take no more than one month, however duration varies between 3 -8 weeks, so you need to schedule your work accordingly, remembering the SocMon stages including validation. Set out tasks under each heading

Activity / task Time unit → (wks)	1 Oct	7 Oct	14 Oct	21 Oct	28 Oct	4 Nov	11 Nov	18 Nov	25 Nov – 2 Dec
Preparatory activities									
Define goals and objectives	✔								
Establish study area boundaries	✔								
Determine SocMon team	✔								
Secondary data collection									
Compile and review secondary data	▓	▓							
Identify gaps in knowledge	▓	▓							
Primary data collection and observation									
Adapt and revise PALSNP key informant interview guide	▓	▓							
Pre-test key informant interview		▓							
Administer KI		▓	▓						
Determine sample size (survey)		▓							
Adapt and revise PALSNP survey		▓	▓						
Pre-test survey		▓	▓						
Administer survey			▓	▓					
Data analysis and interpretation									
Develop coding sheet and data table		▓							
Compile and enter KI and survey data		▓	▓	▓	▓				
Analyze and review data (SocMon					▓	▓			

Activity / task Time unit → (wks)	1 Oct	7 Oct	14 Oct	21 Oct	28 Oct	4 Nov	11 Nov	18 Nov	25 Nov – 2 Dec
results and key learning)					▓	▓			
Validation, communication, adaptation									
Draft site monitoring report		▓	▓	▓	▓				
Validation meeting (provide feedback to stakeholders) **Potential dates: 30 or 31 Oct 2013**							▓	▓	▓
Finalize site monitoring report & submit draft to CERMES for review							▓		
Submit final report to management bodies and relevant government agencies									▓
Communicate findings with media to the public									▓

✓ Tasks already completed during training workshop

7. Critical research resources required (budget and non-budget)

Many resources will be used in the research, but there are usually just a few that are so critical the assessment may not be able to proceed without them. You must know early what these are.

Resource description	Use of resource	Comments on availability
Travel funds (Jasmine, Kathleen, Naqqi)	Air transfer	Sub-grant
Accommodation		In-kind
Fuel for DEMA vehicles	Ground transportation	Sub-grant
Printer cartridges	KIs and surveys	Sub-grant
Stationery	KIs and surveys	Sub-grant
Photocopying	Surveys and validation material	Sub-grant
Refreshments (validation)	Validation meeting	Sub-grant
Press release	Communication of results	DEMA
Computers and printers	SocMon research	DEMA

8. Budget

The SocMon methodology is intended to be affordable so that monitoring can be sustained. Pay close attention to what are realistic costs, including in-kind contributions that may be available. Use the work plan schedule to estimate the monitoring costs, broken down by SocMon stage in order to provide information on required cash flow based on the schedule. Critical resources can be skills (communication specialist, visual artist etc.).

Description of expense	No. of units	Unit cost*	Total cost*
Preparatory activities			
No associated costs	-	-	-
Secondary data collection			
Photocopying expenses			10.00
Interviews and observation			
Travel funds (Kathleen, Jasmine, Naqqi)	3	150.00	450.00
Accommodation (National Museum)	2	750.00	1500.00
Fuel for DEMA and TCRF vehicles	2 tanks of gas	100.00	200.00
Printer cartridges	2	50.00	100.00
Stationery	2	10.00	20.00
Photocopying (toner cartridge and costs)	1	100.00	100.00
Validation, communication, adaptation			
Information packet (folder, handouts + DVD)	50	5.00	250.00
DEMA conference room (validation meeting)	1	In-kind	In-kind
Refreshments (validation)	50	5.00	250.00
Press release	1	In-kind	In-kind
Administrative costs TCRF			100.00
Sum total of SocMon costs			

* = currency used [USD]

9. Key variables to be monitored

Based on the goal and objectives of the monitoring, you need to determine which (if not all) of the SocMon Caribbean variables need to be measured, sources of secondary information to consult before interviewing (key informant or household), and practical considerations for each variable. The practical considerations include levels of difficulty in acquiring information, issues, error or uncertainty, challenges in implementing fieldwork, links to data sources that are desirable, etc.

Remember the three types of variables: Key informant interview/secondary sources variables (K), survey variables (S) and climate change (CC) variables.

7

Also remember that if a variable specific to your purposes of monitoring is not available among the 70 SocMon Caribbean variables, you can add new variables.

KEY INFORMANT INTERVIEW/SECONDARY SOURCES VARIABLES (N = 25)			
Var. No.	Variable to be monitored	Obj. 1, 2, 3...	Secondary sources of information &practical considerations, constraints and challenges with secondary data sources and carrying out fieldwork
K1.	Study area	1	Information on this variable is usually collected from existing secondary data. KI interviews will be conducted to fill gaps in knowledge.
K2.	Population		
K3.	Number of households		
K 4.	Migration rate		
K5.	Age		
K6.	Gender		
K7.	Education		
K8.	Literacy		
K9.	Ethnicity		
K10.	Religion		

8

	KEY INFORMANT INTERVIEW/SECONDARY SOURCES VARIABLES (N = 25)		
Var. No.	Variable to be monitored	Obj. 1, 2, 3...	Secondary sources of information &practical considerations, constraints and challenges with secondary data sources and carrying out fieldwork
K11.	Language		
K12.	Occupation	1-4	
K13.	Community infrastructure and business development	1, 3	Collected from observation, secondary sources.
K14.	Activities	1-4	Collected from observation, secondary sources.
K15.	Goods and services	1, 3, 4	Secondary sources
K16.	Types of use	1 - 4	Secondary sources.
K17.	Value of goods and services	1, 3	
K18.	Goods and services market orientation		
K19.	Use patterns	1, 2	Objective 2 in terms of determining compliance
K20.	Levels and types of impact	1– 4	KI interviews. Link with responses on threats obtained via surveys.
K21.	Level of use by outsiders	1, 3	Secondary sources

9

	KEY INFORMANT INTERVIEW/SECONDARY SOURCES VARIABLES (N = 25)		
Var. No.	Variable to be monitored	Obj. 1, 2, 3...	Secondary sources of information &practical considerations, constraints and challenges with secondary data sources and carrying out fieldwork
K22.	Household use		
K23.	Stakeholders	1, 3, 4	
K24.	Tourist profile	1, 3, 4	Use KI interviews to fill in any gaps in knowledge
K25.	Management body	4	Obtain from secondary data. Relevant to management agencies with a mandate for management of the area
K26.	Management plan	4	Secondary sources and KI interview (with Kathleen, Henry and any other relevant management personnel)
K27.	Enabling legislation	4	Obtain from secondary sources and KI interviews (with Kathleen, Henry and any other relevant management personnel)
K28.	Management resources	4	Obtain from secondary sources and KI interviews (with Kathleen, Henry and any other relevant management personnel)
K29.	Formal tenure and rules		
K30.	Informal tenure and rules, customs and traditions		

10

KEY INFORMANT INTERVIEW/SECONDARY SOURCES VARIABLES (N = 25)			
Var. No.	Variable to be monitored	Obj. 1, 2, 3...	Secondary sources of information &practical considerations, constraints and challenges with secondary data sources and carrying out fieldwork
K31.	Stakeholder participation	3, 4	Use this variable to also measure degree of interaction between managers and stakeholders. Determine the number of regularly scheduled meetings between NMP managers, staff and stakeholders to discuss compliance with the management plan etc. Use meeting minutes to gather information such as number and location of meetings per year, agendas, topics of discussion, conflicts, solutions and those in attendance. A review of these records could provide information on problems and issues related to compliance and enforcement.
K32.	Community and stakeholder organizations	3	
K35	Critical activities for management intervention	1, 4	
K36	Perceptions of resource conditions	1, 3, 4	
K42	Stakeholder interactions	3, 4	

11

40

KEY INFORMANT INTERVIEW/SECONDARY SOURCES VARIABLES (N = 25)			
Var. No.	Variable to be monitored	Obj. 1, 2, 3...	Secondary sources of information &practical considerations, constraints and challenges with secondary data sources and carrying out fieldwork
[New]	Defined enforcement procedures	2, 4	This is a measure of the existence and description of guidelines and procedures developed for staff charged with enforcement responsibilities and how they are to act depending on the type of offence encountered. Collect the data for this variable by reviewing the monitoring, control, surveillance and enforcement section for the NMP for information on the enforcement programme and its structure. This is covered on pgs 25-26 of the PALSNP management plan. Additionally interviews with the Director and enforcement staff may be undertaken to identify the monitoring, control, surveillance and enforcement programme.
[New]	Enforcement coverage	2, 4	This variable could measure the number of surveillance and monitoring patrols undertaken by NMP staff during a given time period and in a specified area. The information is used to review the consistency of patrol activities. This is necessary for assessing trends in violations or non-compliance since the latter is generally measured as the number of violations per patrol effort. The information will be useful in determining how well NMP management is meeting it management activities.
[New]	Information dissemination or outreach and community support	1 - 4	The variable can measure the number and effectiveness of capacity-building efforts for stakeholders on the objectives and benefits, rules, regulations and enforcement arrangements of the NMP.

SURVEY VARIABLES (N = 25)			
Var. No.	Variable to be monitored	Obj. 1, 2, 3…	Secondary sources of information &practical considerations, constraints and challenges with secondary data sources and carrying out fieldwork
S1.	Age	1 - 4	
S2.	Gender	1 - 4	
S3.	Ethnicity	1 - 4	**Will not use the term ethnicity**
S4.	Education	1 - 4	
S5.	Religion		
S6.	Language		
S7.	Occupation	1 - 4	
S8.	Household size		
S9.	Household income		
S10.	Household activities		
S11.	Household goods and services		

42

SURVEY VARIABLES (N = 25)			
Var. No.	Variable to be monitored	Obj. 1, 2, 3...	Secondary sources of information &practical considerations, constraints and challenges with secondary data sources and carrying out fieldwork
S12.	Types of household uses		
S13.	Household market orientation		
S14.	Household uses		
S15.	Non-market and non-use values	1 - 4	
S16.	Perceptions of resource conditions	1, 3, 4	
S17.	Perceived threats	1, 3, 4	
S18.	Awareness of rules and regulations	2, 3, 4	
S19.	Compliance	2, 4	
S20.	Enforcement	2, 4	
S21.	Participation in decision-making	3, 4	
S22.	Membership in stakeholder organizations	3	

14

43

	SURVEY VARIABLES (N = 25)		
Var. No.	Variable to be monitored	Obj. 1, 2, 3...	Secondary sources of information &practical considerations, constraints and challenges with secondary data sources and carrying out fieldwork
S23.	Perceived coastal management problems	1, 2, 4	
S24.	Perceived coastal management solutions	1, 2, 3	
S25.	Perceived community problems	1	
S26.	Success in coastal management	3, 4	
S27.	Challenges in coastal management	3, 4	
S28.	Material style of life		
S 34	Perceived management responsibility	3	
S35	Management priorities	1, 2, 4	
S37	Knowledge and perceptions of physical development impacts and negative impact	1	

15

44

	SURVEY VARIABLES (N = 25)		
Var. No.	Variable to be monitored	Obj. 1, 2, 3...	Secondary sources of information &practical considerations, constraints and challenges with secondary data sources and carrying out fieldwork
S38	Perceived responsibility for impact reduction	1 , 4	
S41	MPA user frequency and type of MPA use	1, 3	
[S44]	Length of residence in TCI	1, 3	
[S45]	Length of time in current occupation	1, 3	

10. Interview sample design

Depending on many factors ranging from the objectives of monitoring to area demographics, you need to determine 'how' and 'how many' for selection of key informants and households.

a. Key informants	b. Households
Critical information areas Tourism Beach vending Watersports	**Estimated number of households in study area and means of obtaining estimate** **Approx. 1,000**
No. of informants:20	**Approx. sample size: 50**
Selection process: Critical information areas/issues of concern	**Sample selection method:** HHs within watershed of Park West Road, Palmgrove, Cockburn Town, west of Nookie Hill Road

11. Visualization techniques

The GCRMN manual describes several visualization techniques that are useful for collecting, displaying and communicating socio-economic data informatively to document or assist decision-making. Many methods may be used simultaneously or sequentially. The means of presenting socio-economic monitoring results is critical in showing relationships among the data. Which methods will you use?

Technique and page in manual	Variable and objective nos.	Notes on application of the technique to the variable and objectives (e.g. for all or some stakeholders? Issues?)
Maps – 113	K1, K19, K20 Obj 1 - 4	
Transects - 119		
Timelines - 121		
Seasonal calendars - 125		
Historical transects - 129		
Decision trees - 131		
Venn diagrams - 133		
Flow charts – 136		
Ranking - 138		

12. Key points to consider in data analysis and interpretation

Depending on the nature of the study site and your monitoring process there are often special points to consider as you analyse and interpret data. These may be assumptions, constraints or expertise required. You will need to know these beforehand and to write them up with results.

1 Sample size for tourists and residents for surveys is less than ideal for this assessment. Will be valid but not statistically representative.
2 Key informants will not be representative. Selection based on willingness to participate, therefore there will be key informant bias.
3 Assumption bias in determination of variables for assessment
4 Some selection bias in survey respondents

13. Communication plan and issues in arrangements for communication and validation

Communication and validation of results and key learning is often done in workshops, but other means are used to supplement this and ensure that various audiences receive the outputs. However done, there will always be some practical matters to address, i.e. issues in arrangements for communication and validation.

Target audience	Communication product(s)	Communication pathway(s)	Practical matters
Residents	Presentation Press release	Meeting Media	Possible low turn out Refreshments necessary Translation into Spanish and Kreyol
Watersports	Presentation e-brochure	Meeting Email	
Hoteliers	Presentation e-brochure	TCHTA meeting (piggy-back) Email	Piggy-backing
Tourists	e-brochure	Email	Low response Privacy
Landscapers	Presentation e-brochure	Meeting Email	
Government& NGOs	Presentation (abbreviated)	Meeting	Invite HODs & NGOs to stakeholder meeting but hold separate meeting specifically for them
Service sector (vendors, restaurateurs, golf club)	Presentation	Meeting	Stakeholder meeting

14. Plans for sustaining monitoring over the next five years

A socio-economic monitoring program is usually repeated every 2-5 years. The frequency of monitoring depends on the site situation and data needs for the site. List plans for sustained monitoring five years from now.

1 Possibility for repeating SocMon process in three years but this is dependent on DEMA structure and capacity at the time
2 Improved and increased capacity of community will support sustained monitoring
3 Possible private sector financial support and collaboration for sustained monitoring in the future

15. Challengesof implementing a sustained monitoring program at your site

Implementinga SocMon monitoring program at coastal sites may be challenging for a number of reasons including lack of human and financial resources, lack of fully functional integrated coastal management, etc. Provide a list of challenges, if any, for your site.

1 Sustained monitoring dependent on institutional memory
2 Funding
3 Limited human resources for monitoring
4 Stakeholder fatigue

18

5 Recommendations from TCI SocMon project may conflict with other government priorities

16. Initiatives/projects that may impact on SocMon at the site and future use of SocMon for socio-economic monitoring

It is important to know if there are any on-going or planned initiatives or projects at your site to determine relevance to the SocMon study, possibility for synergy; prevent duplication and intrusion in communities. List any initiatives or projects that are on-going or slated for your site.

Initiative/project	Impact on SocMon study
FORCE project	Stakeholder fatigue Synergy and corroboration of SocMon data
Watershed management plan (to be implemented)	Synergy – SocMon data may be incorporated into plan
Possible alterations to PAs legislation	Potential for changing threats and priority of threats
Possible socio-economic assessment of watersports sector (TCIG)	Possible synergy with TCI SocMon Stakeholder fatigue
National Physical Development Plan	Synergy – SocMon data may be incorporated into plan

17. Informing MPA management and/or policy decisions in the Turks and Caicos Islands

SocMon is a very useful methodology that may be used for guiding management of coastal resources and informing policy decisions. List a few areas where SocMon may be used for such.

1 Useful for informing government in review of PAs legislation. Review pending.
2 Useful for informing DEMA *re:* pending watershed management plan implementation
3 Useful for informing the National Physical Development Plan
4 Useful for building stakeholder capacity to collaborate and willingness for NMP stewardship and management

20

18. Potential for adaptive management using SocMon

SocMoncan be especially useful in adaptive management in order to improve management, planning, impacts, accountability etc. List a few areas which will have the greatest potential for adaptive management if SocMon is used for monitoring in MPAs in the Turks and Caicos Islands.

1 Encouraging and building stakeholder participation in stewardship and management
2 Identifying gaps in current policy and management
3 Establishing a time-series for socio-economic baseline
4 Improving public and private sector awareness of the PALSNP and rules and regulations

19. Any additional notes (optional)

APPENDIX 2 SEMI-STRUCTURED INTERVIEW GUIDE

Date:__/___/___Location:_____   ID#: ____   Q#: _____
Start time _____

Socio-Economic Monitoring
Columbus Landfall National Park
Stakeholder Survey

The Department of Environment and Maritime Affairs (DEMA, in cooperation with the TC Reef Fund (TCRF,) is conducting a study to determine uses, attitudes and perceptions about the Columbus Landfall National Park from people living and working near or within the Park.There are no right or wrong answers, so please answer freely. Your responses/answers to this survey will be invaluable input towards updating the sustainable management plan for the Park. Your identity will not be divulged and the highest degree of confidentiality will be observed.

Objective 1: To assess the uses of the National Marine Park and identify threats and problems to the natural resources.

1.
   a) Do you know the boundaries of the Columbus Landfall National Park (CLNP)?
      [   ] Yes   [   ] No [S29 MPA Knowledge and Awareness]

   b) If YES, please either identify the boundaries or show the extent of the CLNP on the map. [S29 MPA Knowledge and Awareness]

      Check one of the following to indicate respondent knowledge:

      [   ]Good
      [   ]Fair
      [   ]Poor

      If NO, show the respondent a map of the CLNP and point out the boundaries of the marine park.

2. What do you do within the park boundaries? Check **ALL** that apply. [S41 MPA User Frequency and Type of MPA Use(s)]
   [   ] Work
   [   ] Swim
   [   ] Use the Beach
   [   ] Scuba Dive/Free Dive
   [   ] Snorkel
   [   ] Boat
   [   ] Fish
   [   ] Other, please specify _____

3. How often do you do any of these activities? [S41 MPA User Frequency and Type of MPA Use(s)]

   Days per week
   [   ]1   [   ]2   [   ]3   [   ]4   [   ]5   [   ]6   [   ]7

4. Select the three most common ways people make money in the CLNP. [S30 Types and Changes in MPA Livelihoods]
   a) Watersports
   b) Diving
   c) Beach vending
   d) Hotel and resorts
   e) Investment and finance

f) Food and beverage
g) Recreation
h) Fishing
i) Other, please specify _____

5. How would you describe the current health of the following resources in the Columbus Landfall National Park? How would you have described it 10 years ago?

Resource	Condition 1: v. bad 2: bad 3:neither good nor bad 4: good 5: v. good DK: Don't Know [S16 Perceptions of Resource Conditions]	10 years ago 1. V. bad 2. bad 3. neither good nor bad 4. good 5. very good DK: Don't know
Coral reefs	1 2 3 4 5 DK	1 2 3 4 5 DK
Mangroves	1 2 3 4 5 DK	1 2 3 4 5 DK
Seagrass beds	1 2 3 4 5 DK	1 2 3 4 5 DK
Fish populations	1 2 3 4 5 DK	1 2 3 4 5 DK
Beaches	1 2 3 4 5 DK	1 2 3 4 5 DK
Other Marine life	1 2 3 4 5 DK	1 2 3 4 5 DK
Water quality	1 2 3 4 5 DK	1 2 3 4 5 DK

6. From the list below, check the **THREE** biggest potential threats to the natural resources in the Columbus LandfallNational Park? [S17 Perceived Threats]

[ ]Overdevelopment/improper development
[ ] Decreasing and deteriorating beach access
[ ] Pollution (water and land based)
[ ]Climatechange (sea-level rise, increase in sea-water temperatures, changing rainfall patterns, acidification, etc.)
[ ] Beach erosion (natural and human-induced erosion)
[ ] Beach restoration/beach re-nourishment activities
[ ]Hurricanes and storms
[ ]Illegal fishing
[ ] Overuse (too many users in a particular place at onetime)
[ ] Dredging
[ ] Invasive species (marine and terrestrial invasive species)
[ ]Other, please specify_____

7. Using a scale of 1 to 5, rate the significance of the following issues to users and communities within / next to the Park. [S25 Perceived Community Problems]

Community problem	Very significant (5)	Significant (4)	Neither significant nor insignificant (3)	Insignificant (2)	Very insignificant (1)
Improper trash disposal					
Improper sewage disposal					
Overuse of pesticides/fertilizers					
Illegal development					
Over-population					
Illegal Vendors					

8. Do you think onshore physical development along the Columbus Landfall National Park has had a positive, negative or mixed impact on how people earn a living? [S30 Types and Changes in MPA Livelihoods]

[ ] positive impact	Why has it been positive?
[} mixed impact	Why has it been mixed?
[ ] negative impact	Why has it been negative?

Objective 2: To evaluate the level of stakeholder awareness and compliance with park regulations and the enforcement of them.

9. Are there regulations and policy related to the following activities within the CLNP? [S18 Awareness of Rules and Regulations]

Activity	
Fishing	[ ] Yes [ ] No[ ] DK
Hotel development	[ ] Yes [ ] No [ ] DK
Watersports	[ ] Yes [ ] No [ ] DK
Mangroves	[ ] Yes [ ] No [ ] DK
Boating	[ ] Yes [ ] No [ ] DK

53

10. In your opinion, to what extent do people comply with these regulations and policies? *Check ONE.*
[S19 Compliance]

[   ] Fully compliant
[   ] Moderately compliant
[   ] Minimally compliant
[   ] Not compliant
[   ] Don't know

11. On a scale of 1 to 5 (1 = no enforcement, 2 = poorly enforced, 3 = satisfactorily enforced, 4 = well enforced, 5 = ideally enforced) to what extent do you believe the regulations and policies are enforced? [   ] [S20 Enforcement]

12. Why did you give that rating?

_____

_____

_____

Objective 3: To determine stakeholder capacity and willingness for collaboration in CLNP stewardship and management.

12. How much potential, do you believe, the following organisations have to manage the CLNP?*(1= not capable, 2 = slightly capable, 3= somewhat capable, 4 = capable, 5 = very capable)*
[NEW Perceived Management Capacity and Capability]

[   ] Local residents
[   ] Watersports operators
[   ] Department of Environment & Maritime Affairs (DEMA, formerly the DECR)
[   ] Hoteliers
[   ] Tourist Board
[   ] Non-governmental organizations (e.g. TC National Trust, TC Reef Fund)
[   ] Others, please state_____

13. *Parks stewardship is the acceptance of responsibility for sustainable use and protection of the environment (resources, ecosystems etc.) for current and future generations.*

a) Do you feel any sense of stewardship for the CLNP? [NEW Sense of Stewardship]

[   ] Yes   [   ] No   [   ] Don't know

14. a) Do you participate in any stewardship activities in the CLNP? [S21 Participation in decision-making with revision to include stewardship]

[   ] Yes   [   ] No   [   ] Don't know

b) If YES, in which activities do you participate?

_____

_____

c) Would you be willing to increase your personal stewardship of the CLNP? [S21 Participation in decision-making with revision to include stewardship]

[ ] Yes [ ] No [ ] Don't Know

15. In what way do you believe the following stakeholders interact with DEMA? [S21 Participation in Decision-making, with possible revision to include perceptions of stakeholder-management body interactions]

Stakeholder	Interaction rating 1= very poorly, 2= poorly, 3= satisfactorily, 4= well, 5 = ideally DK = Don't know
Water sports operators	1 2 3 4 5 DK
Fishers	1 2 3 4 5 DK
Dive operators	1 2 3 4 5 DK
Hoteliers	1 2 3 4 5 DK
National service clubs (Examples: Rotary, Kiwanis, PRIDE, Soroptimist)	1 2 3 4 5 DK
Statutory bodies (Tourist Board, National Trust, etc.)	1 2 3 4 5 DK

16. How much responsibility should each of the following groups assume in reducing the negative impacts that some activities have on the resources within the CLNP? [NEW Perceived responsibility for impact reduction (not be confused with CC SocMon S38 which focuses on responsibilities for reduction of impacts due to physical development]

Stakeholder	Interaction rating 1 = No role, 2 = Minimal role, 3 = Neither minimal nor moderate role, 4 = Moderate role, 5 = Important role, DK = Don't know
Water sports operators	1 2 3 4 5 DK
Fishers	1 2 3 4 5 DK
Dive operators	1 2 3 4 5 DK
Hoteliers	1 2 3 4 5 DK
National service clubs (Examples: Rotary, Kiwanis, PRIDE, Soroptimist)	1 2 3 4 5 DK
Statutory bodies (Tourist Board, National Trust, etc.)	1 2 3 4 5 DK
DEMA	1 2 3 4 5 DK
Other Government Organizations (Examples:	1 2 3 4 5 DK

Marine Police, Planning, EHD)	
Residents	1 2 3 4 5 DK

Objective 4: To assess trends in the extent to which CLNP management bodies are contributing to the achievement of NMP goals

17. What are two major problems facing management of the CLNP? [S27 Challenges in Coastal Management]
   - a. _____
   - b. _____

18. Suggest solutions to each of these problems. [S27 Challenges in Coastal Management]
   - a. _____
   - b. _____

19. On a scale of 1-5 (1= very bad, 5 = very good) rate the effectiveness of management of the CLNP by DEMA in achieving the following management objectives: [S26 & S27 Successes and Challenges in Coastal Management]

Management objectives	Rating 1: very bad; 2: bad; 3: neither good nor bad; 4: good; 5: very good; DK = Don't know
Protection of natural and culturally significant areas.	1 2 3 4 5 DK
Keeping the park in as natural a state as possible.	1 2 3 4 5 DK
Managing and protecting the fishery stocks.	1 2 3 4 5 DK
Managing the way in which visitors use the park.	1 2 3 4 5 DK
Prevention of inappropriate uses or activities in the park.	1 2 3 4 5 DK

20. What activities occurring within CLNP would you like to see addressed by DEMA? [S35 Management Priorities]

_____

_____

_____

Demographics

21. Gender(observed)[ ] Male   [ ] Female [S2 Gender]

22. How old are you? _____ years [S1 Age]

23. Where are you from originally? [New Origin]
   - [ ] TCI
   - [ ] Jamaica
   - [ ] Bahamas
   - [ ] Dominican Republic
   - [ ] Haiti
   - [ ] Canada
   - [ ] US
   - [ ] UK
   - [ ] Other, please specify_____

24. How long have you lived in the TCI? _____ [New Number of years living in area]

25. What is the highest level of education you have completed? [S4 Education]
[ ]Primary School   [ ] Secondary School

[   ] Technical/Vocational   [   ]Bachelor's Degree or higher

26. What is your current job? [S7 Occupation]   _____

27. How long have you been doing this kind of work? [S7 Occupation]   _____

Name of respondent (Optional)   _____

Email (Optional)   _____

Time finished: _____

<div align="center">Thank you very much</div>

APPENDIX 3 VARIABLES CHOSEN FOR MONITORING

Data collection instrument	Variable no.	Variable
Semi-structured interview	S1	Age
	S2	Gender
	S4	Education
	S7	Occupation
	S16	Perceptions of resource conditions
	S17	Perceived threats
	S18	Awareness of rules and regulations
	S19	Compliance
	S20	Enforcement
	S21*	Participation in decision-making
	S25	Perceived community problems
	S26	Successes in coastal management
	S27	Challenges in coastal management
	S29**	MPA knowledge and awareness
	S30**	Types and changes in MPA livelihoods
	S35**	Management priorities
	S41**	MPA user frequency and type of MPA use(s)
	NEW	Perceived management capacity and capability
	NEW	Sense of stewardship
	NEW	Perceived responsibility for impact reduction
	NEW	Origin
	NEW	Number of years living in the area

* Suggestion to revise the original variable to allow collection of data on stewardship and perceptions of interactions between stakeholders and management bodies

**Variable developed in the Caribbean Challenge SocMon project (see Pena, McConney and Blackman 2013).

APPENDIX 4 FOCUS GROUP QUESTIONS

1. How would you describe the current health of the following resources in the CLNP compared with 10 and 20 years ago? What do you think are the reasons for the changes?*Introduce matrix timeline and fill in with group responses.*

2. What issues occurring within the CLNP would you like to see addressed by DEMA? *Provide stakeholders with paper to write out answers. Post on board, grouping together similar responses.*

3. Which regulations/policies regulating activities in the CLNP are you aware of? *Pass out colored paper and have individuals fill in responses to be posted on the wall, grouped according to similarity.*

4. Which of these regulations/policies do you think people take seriously? Not Seriously? *Provide stakeholders with two colors of stickers, one representing seriously and the other not seriously. Have them place the stickers on the policies they believe are taken seriously or not seriously accordingly.*

5. In what way(s), if at all, could enforcement be improved? *Pass out one color of paper and post responses on the wall, grouped according to similarity.*

6. In what ways could compliance be improved? *Pass out a different color of paper than enforcement above and post responses on the wall, grouped according to similarity.*

Environmental (ecosystem) stewardship is now generally recognised as the acceptance of responsibility for sustainable use and protection of the environment (resources, ecosystems etc.) for current and future generations.

7. What activities would you like to participate in towards the stewardship and management of CLNP?*Write responses on flip chart.*

8. Do you have any additional comments about the CLNP and its management? *Write responses on flip chart*