

Socio-economic Monitoring by Caribbean Challenge MPA Managers

Report No. 5

Developing a core set of indicators for decision-making and adaptive management at the Tobago Cays Marine Park, St. Vincent and the Grenadines

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1 INTRODUCTION

1.1 Socio-economic Monitoring by Caribbean Challenge MPA Managers

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 et al. 2000, Bunce and Pomeroy 2003). Consultation with representatives of the MPA community associated with the Caribbean Challenge Initiative¹ indicated the need for capacity building in socio-economic monitoring for the development of an effective regional system of MPAs. This need for MPA capacity building in socio-economic assessment and monitoring has also been identified in various training needs and capacity assessments (Parsram 2007 and Gombos et al. 2011). The Caribbean Challenge Initiative and regional training in SocMon provide a major opportunity for uptake of SocMon for achieving improved MPA management capacity and therefore conservation of coastal resources. With strengthened capacity for management through socio-economic monitoring, MPA managers, authorities and field staffs will also increase their capacity for adaptive management through learning-by-doing.

The Centre for Resource Management and Environmental Studies (CERMES) at the University of the West Indies, Cave Hill Campus was awarded a grant of just over USD 63,000 by The National Fish and Wildlife Foundation (NFWF) to support Socio-economic monitoring by Caribbean Challenge MPA managers. The project's long-term conservation outcome is increased capacity for effective MPA management among Caribbean Challenge (CC) countries through the use of social and economic monitoring data in MPA decision-making.

The goal of this project is to build capacity for improved and effective MPA management among Caribbean Challenge countries by promoting the use of social and economic data in MPA management by:

Training approximately 40 MPA managers/staff, from three Caribbean Challenge countries, in the practical use of SocMon Caribbean methods via three country-specific workshops

- Initiation of eight site assessment and monitoring programs for coastal management in each of the countries receiving the training via a small grant of USD 2,500
- Documentation of training and monitoring initiation processes, to make them available to a worldwide audience and CERMES communications for replication, with improvement, in future rounds of SocMon activity
- Submission of compatible data to the Reef Base Socio-Economic global database and CaMPAM database

The project involves eight MPAs across three CC countries - Grenada, St. Vincent and the Grenadines, and St. Lucia. Participating MPAs in St. Vincent and the Grenadines are the South Coast Marine Conservation Area (SCMCA) on mainland St. Vincent and the Tobago Cays Marine Park (TCMP) in the

¹ (<http://www.nature.org/ourinitiatives/regions/caribbean/caribbean-challenge.xml>)

Grenadines. This report presents project activities and results of socio-economic monitoring conducted at the TCMP.

1.2 Situation overview

The Tobago Cays Marine Park (TCMP) is a 66 km² non-extractive Marine Protected Area (MPA) that was established under the Marine Parks Act, 1997. It is the only legislated marine park in St. Vincent and the Grenadines. Since its re-launch in December 2006, a management plan has been developed and implemented and user fees are being collected. Limited socio-economic assessments have been conducted at the TCMP, usually as components of implemented projects, but have not been part of any on-going monitoring program. The SocMon Caribbean methodology for socio-economic monitoring (Bunce and Pomeroy 2003) has been used to carry out surveys but due to limited capacity, the TCMP has been unable to carry out further assessments or initiate sustained monitoring. Therefore regular socio-economic monitoring is not being conducted to assist with management decision-making and adaptive management at the site. In keeping with the TCMP management plan monitoring at least a basic set of indicators, that could be added to or changed over time, that provide comparison with defined baseline conditions is valuable and should be used to improve management performance by providing clear recommendations for changes, as and when needed (Hoggarth 2007).

1.3 Goal and objectives

The main goal of the project therefore was to develop a core set of socio-economic indicators to assist with the effective management of the TCMP. The three objectives for monitoring were:

1. To determine stakeholder perceptions of the marine resources since the MPA re-launch in 2006.
2. To determine the level of stakeholder participation and satisfaction in the management of the MPA.
3. To determine the perceptions of stakeholders on the level of enforcement and protection (security) within the TCMP.

1.4 Organization of report

This report is divided into five sections. Section 1 provides a description of the SocMon Caribbean Challenge project, situation overview of the TCMP and the goals and objectives for monitoring. Section 2 outlines the methods used for gathering the data. The results of the monitoring and validation are provided in Section 3. Discussions and conclusions are in Section 4. The report ends with section 5 which contains recommendations for monitoring and adaptive management.

2 METHODOLOGY

2.1 SocMon training

Eight participants from the two participating MPAs (TCMP and SCMCA), National Parks, Rivers and Beaches Authority (NPRBA), Fisheries Division, Forestry Department and Ministry of Tourism, were trained in the SocMon Caribbean methodology via a 5-day training workshop 17-21 October 2011 at the Sunset Shores Beach Hotel in St. Vincent. The South Coast Marine Conservation Area (SCMCA) was used as the demonstration site for the duration of the workshop (Pena and Blackman 2011).

2.2 Preparatory activities

2.2.1 Survey development and enumerator preparation

A survey specifically targeting a cross-section of TCMP stakeholders was designed to collect the relevant data (Appendix 1). Once the survey was designed by the SocMon team it was submitted to CERMES for review and approval. Twenty survey variables were used to collect the data for this project, fourteen of which were original SocMon Caribbean variables (Bunce and Pomeroy 2003). Of these fourteen variables, the revision and adaptation of four were required to collect some of the data. The development of six new variables was necessary to collect information to specifically address the objectives of the study such as MPA knowledge and awareness, types and changes in MPA livelihoods, MPA changes or impacts, best practices, MPA user frequency and types of MPA use(s) and perceptions of changes in species abundance (Appendix 2).

Three persons were selected to be enumerators based on their prior experience in administering questionnaires within a very similar format. They were briefed on the objectives of the study - what the data would be utilized for and how they should approach collection. They were then provided with individual stakeholder lists with the names of the interviewees. One of the enumerators was responsible for conducting interviews on Union Island and Palm Island, another for Mayreau and the last for the Tobago Cays Marine Park.

2.2.2 Sample selection

The eight stakeholder groups that were identified for participation in the Management Committee as identified in the TCMP Management Plan (2007- 2009) – fishers, yachters, dive operators, day charter operators, water taxi operators, vendors, hoteliers and individuals from Mayreau - formed the population for this study. Using this as the starting point, a list of the individuals within these eight stakeholder groups was generated. To add a component of anonymity, these lists were then given to the three enumerators who conducted the stakeholder questionnaires. The enumerators were then instructed to conduct a specific number of surveys for each stakeholder group utilizing a stratified random sampling method.

2.3 SocMon team

The SocMon team comprised Mr. Kenneth Williams, Ms. Althea Nanton and Mr. Olando Harvey. Kenneth Williams is the operations manager of the TCMP and served as the team leader for this round of SocMon. He was responsible for ensuring all project tasks were completed in a timely and efficient manner. Mr. Williams also played a critical role in the development and finalization of the survey instrument. Ms Althea Nanton is a senior ranger of the TCMP. Ms. Nanton's primary role on the team was in overseeing the administering of the surveys. She ensured that the enumerators were trained and organized the logistics for enumerators to get to the target audience (i.e. trips to Mayreau and Tobago Cays). Mr Olando Harvey is the Marine Biologist at the TCMP and was responsible for assisting with the survey design, data entry and analysis, and report preparation. Mr Harvey collected the completed surveys and coded them to facilitate data analysis. The coded data was then analysed and a report outlining the findings generated.

2.4 Data entry and analysis

While the surveys were being administered, a coding scheme was developed utilizing Microsoft Office Excel to allow for analysis of the data once it was collected. The data were entered into a spreadsheet and analysed using simple descriptive statistics.

2.5 Validation of results

A validation meeting was held at the Tourism Office on 1 March 2013 to provide stakeholders with feedback on information collected during the study. Approximately 20 persons attended with representation from mainly the Southern Grenadines Water Taxi Association and the fishers stakeholder group. A representative from the Sustainable Grenadines Inc. and members of the TCMP staff were also in attendance. Mr. Olando Harvey, former Marine Biologist with the TCMP presented the results via a slide presentation (Appendix 3).

3 RESULTS

The results of the study are presented under headings according to the monitoring objectives.

3.1 Perceptions of changes in the conditions of marine resources and user numbers

3.1.1 Understanding of coastal and marine and coastal ecosystems

There has been an increased understanding of the coastal and marine ecosystems of the TCMP by the majority of respondents (73%) since the 2006 re-launch of the TCMP. It should be noted that almost a quarter of the stakeholders believed there had been no change in their understanding while surprisingly, 4% noted a decrease in understanding since 2006 (Figure 1).

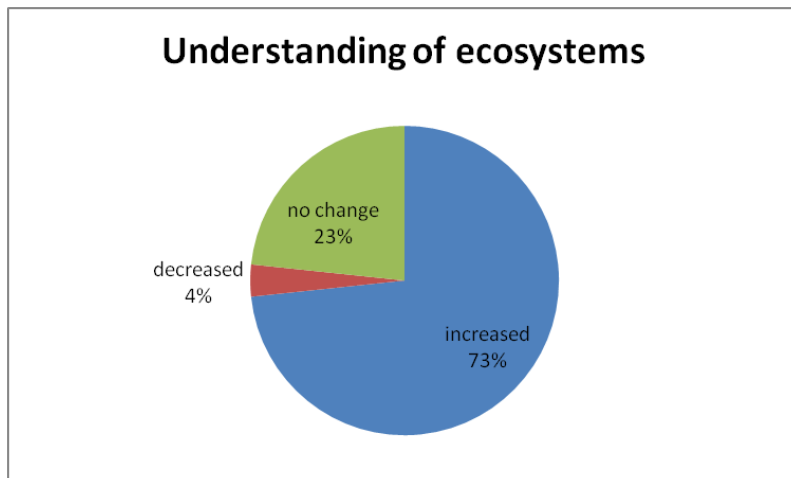


Figure 1 Perceived changes in understanding of TCMP coastal and marine ecosystems

3.1.2 Condition of coral reefs and fish abundance

Just under half of the respondents (47%) have observed a change in coral reef health within the boundaries of the TCMP while 3% did not observe any change over the past six years. A notable and large proportion of persons (50%) have not noticed any change in the condition of the reefs. Of the 47%

percent of interviewees who observed a change in the health of the coral reefs within the TCMP, 60% noted an improvement in health while, 27% noted deterioration in reef health (Figure 2). More than half of the respondents provided reasons for the changes in reef health observed. These were grouped into two main reasons, protection (due to the MPA; 33%) and coral reef death (20%). The majority of respondents (47%) did not provide reasons for the identified changes in reef health.

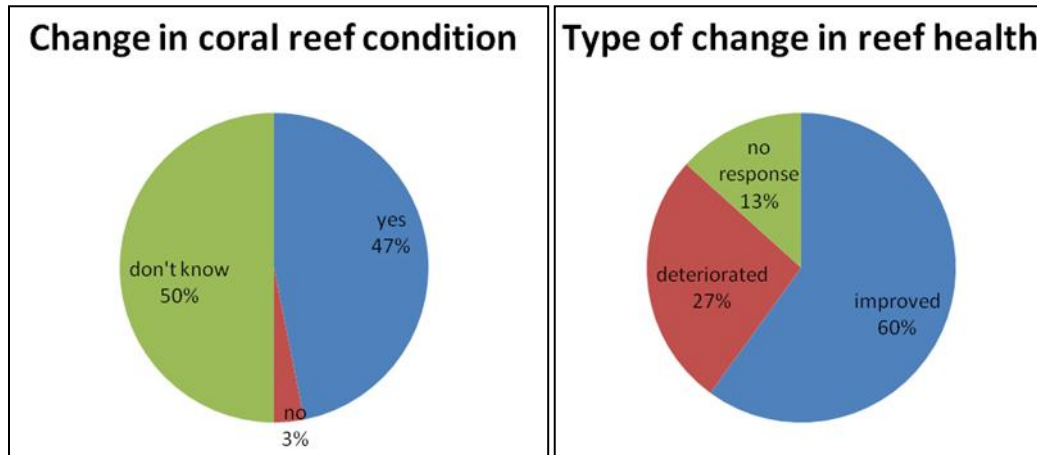


Figure 2 Observed change in the health of TCMP coral reefs and type of change

Relevant to the changes observed in reef health is any change in the number of juvenile fish within the park. Seventy-six percent of persons interviewed indicated they have observed an increase in the abundance of juvenile fish within the Tobago Cays since the re-launch of the marine protected area in 2006. Three percent of respondents indicated they have not observed any change in the abundance of young fish within the MPA, and 21% of respondents noted that they were not in a position to express an opinion (Figure 3).

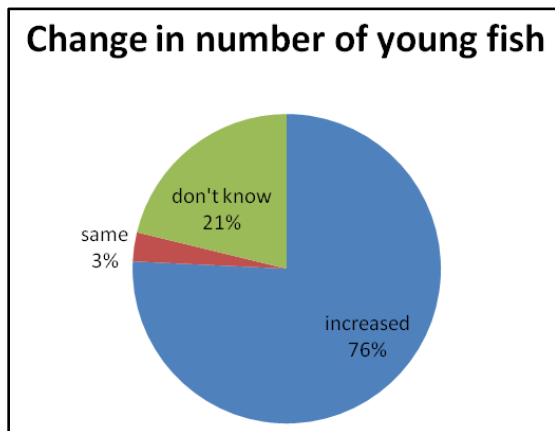


Figure 3 Observed change in the number of juvenile fish in the TCMP since 2006

3.1.3 Perceived change in the users of the TCMP

With regard to the number of fishers within the boundaries of the TCMP, 47% of respondents are of the opinion that the number of fishers existing within the boundaries of the MPA has increased since it was established in 2006; 38% believe there was a decrease and six percent observed no change (Figure 4).

Over half of the respondents (55%) perceive a decrease in the number of divers (SCUBA) since the TCMP was established in 2006 while 24% believe diver numbers have increased and 6% think there has been no change. Fifteen percent of respondents were unable to say if there had been any change in diver numbers (Figure 4).

Forty-six percent of respondents indicated an observed decrease in the number of yachts visiting the Tobago Cays since the establishment of the TCMP. Thirty-six percent noted an increase and 3% noted no change in the number of yachts. Fifteen percent of persons interviewed were unable to say whether there had been a change (Figure 4).

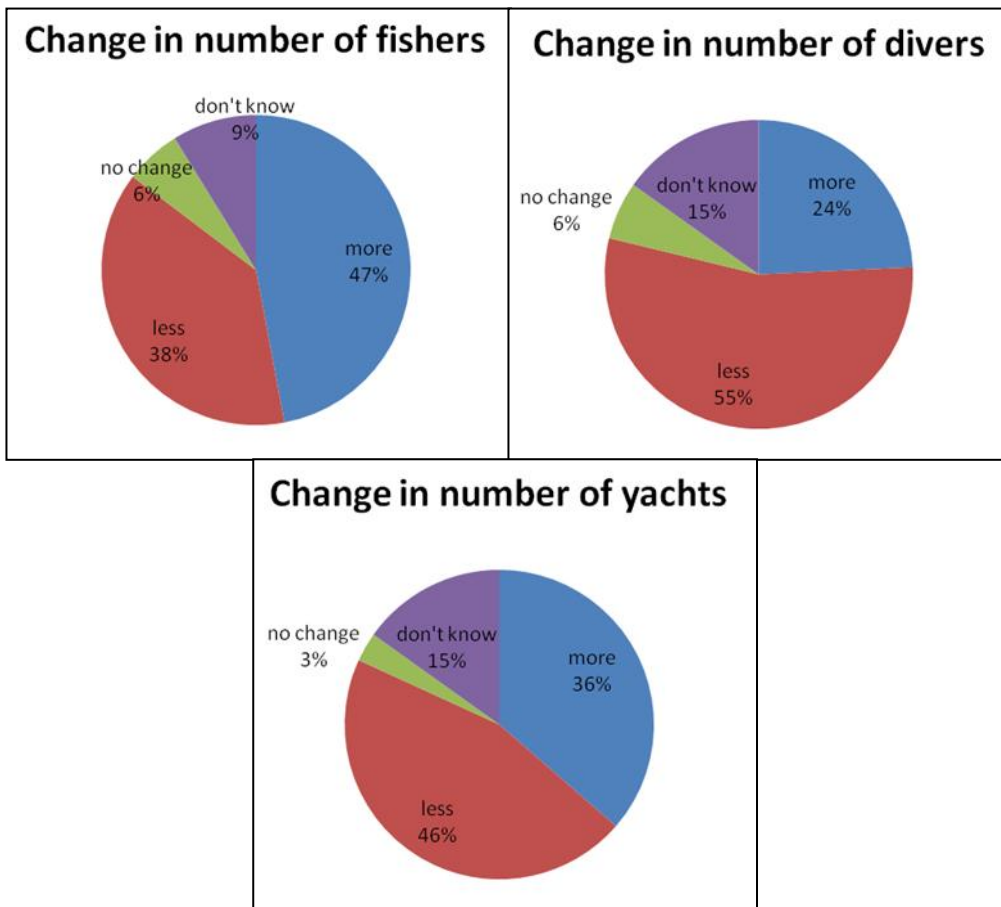


Figure 4 Perceived change in TCMP user number since 2006

3.2 Level of stakeholder participation and satisfaction in management

3.2.1 Stakeholder participation in and influence on TCMP management

Of those who answered the question of whether they had participated in or were involved in TCMP management or any decision-making activities prior to 2006, only 33% indicated they had been. People have either been fully (10%) or somewhat (27%) involved in meetings and discussions with TCMP staff about management of the area and issues in the TCMP since its re-launch in 2006.

The majority of persons interviewed (52%) believe they either have or could have an influence on the management of the marine park (Figure 5).

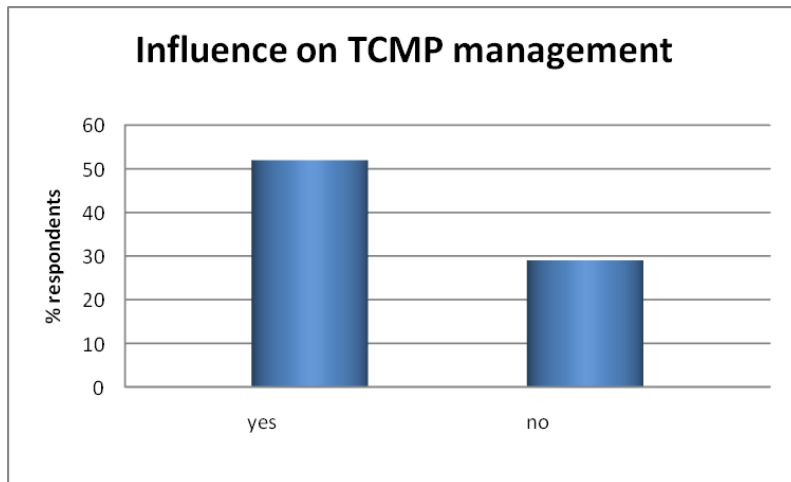


Figure 5 Perceived influence on TCMP management

People's perception of the degree of willingness of TCMP staff to listen to their views about the TCMP was divided. When combined the majority of people (68%) believed that staff was very willing and somewhat willing to listen to their views about the marine park (Figure 6).

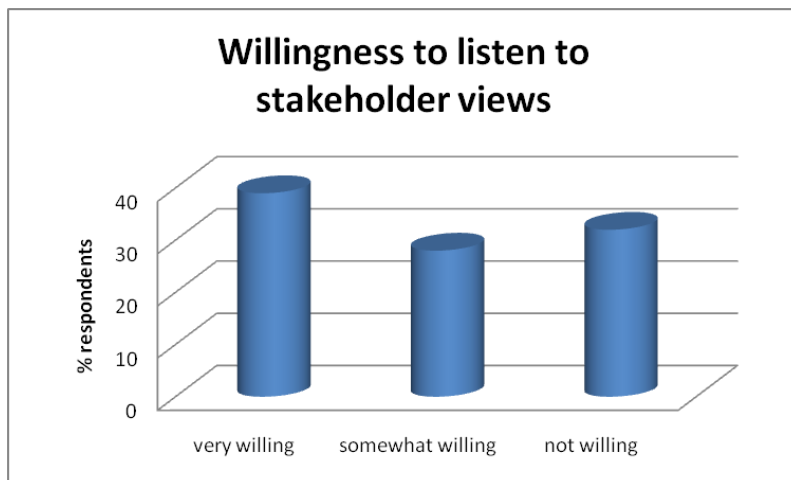


Figure 6 Willingness of TCMP staff to listen to stakeholder views about the marine park

3.2.2 Conflicts and conflict management in the TCMP

The majority of people surveyed (62%) stated that conflicts occur within the TCMP. A fairly large proportion of respondents (32%) did not know whether conflicts occur (Figure 7). Over half of the respondents (58%) noted that TCMP management has been successful in conflict resolution while 12% noted lack of success. A large proportion of persons did not know whether the TCMP had been successful in resolving or preventing conflicts (Figure 7).

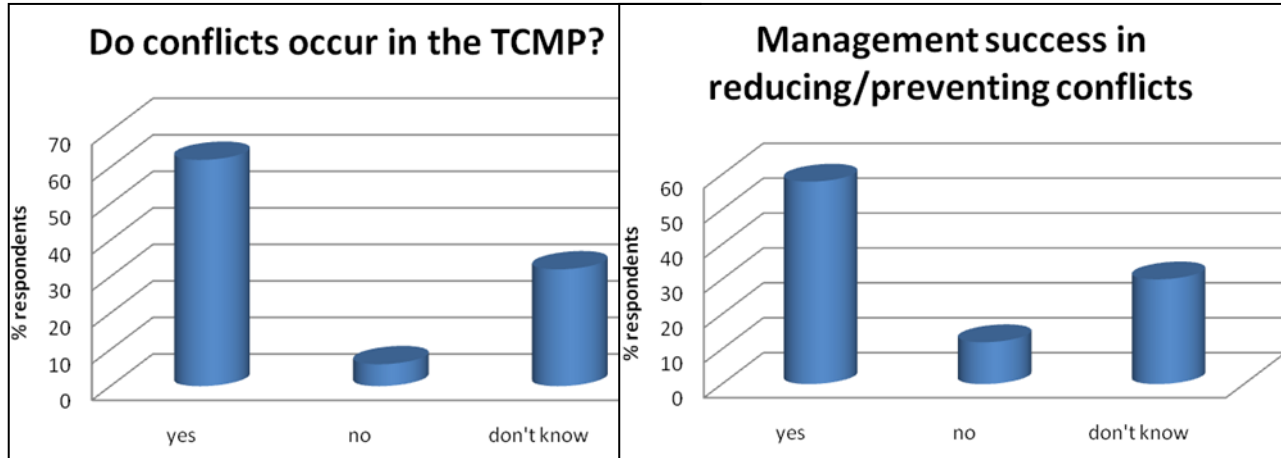


Figure 7 Awareness of conflicts in the TCMP and perceptions of management success in conflict reduction and prevention

3.2.3 Change in MPA management

Seventy-four percent of interviewees indicated that overall the management of the TCMP has improved since the re-launch of the MPA in 2006 whereas nine percent believe that management has deteriorated and 17% are of the opinion that management of the MPA has not changed since 2006 (Figure 8).

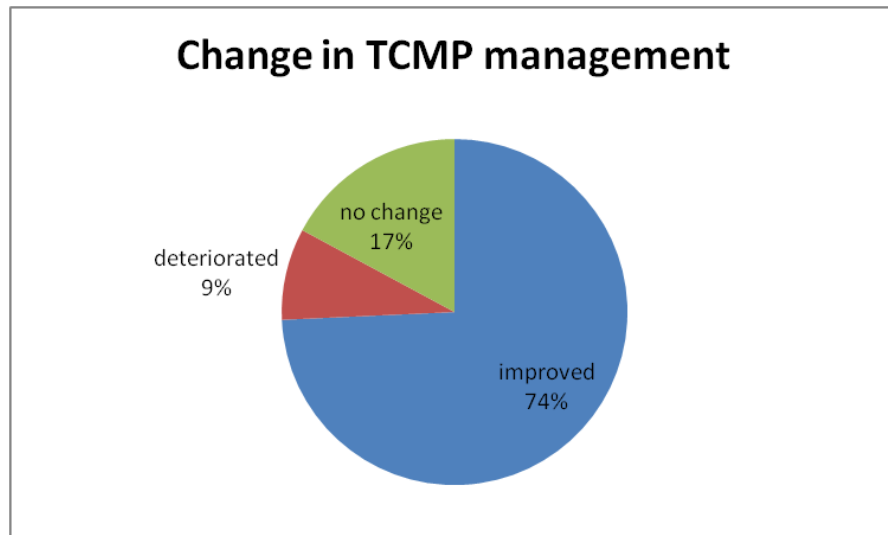


Figure 8 Change in TCMP management since the re-launch in 2006

3.2.4 Safety practices

The overwhelming majority of persons surveyed (62%) believe water taxi operators take adequate precaution in terms of carrying life jackets and the appropriate number of passengers when transporting passengers. Of those who believe this is not the case, negligence and inadequate enforcement were the mean reasons provided for this (Figure 9).

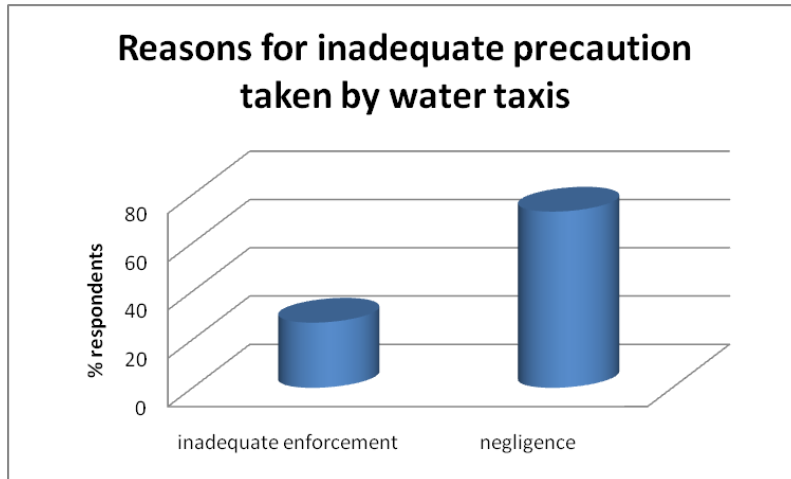
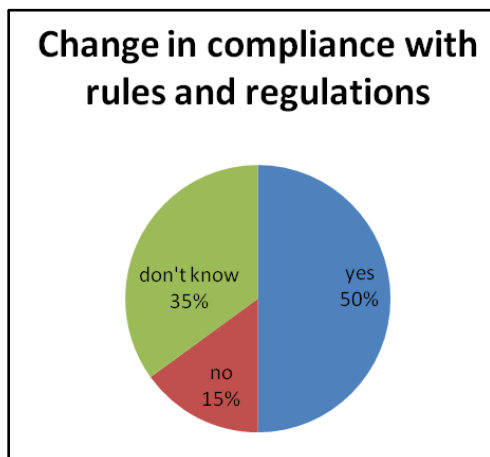


Figure 9 Reasons for inadequate precaution taken by water taxi operators when carrying passengers

3.3 Stakeholder perceptions of enforcement, compliance and protection (security)

3.3.1 Compliance with rules and regulations

Understanding of the rules and regulations of the TCMP has improved for 69% of respondents since 2006 when the MPA was re-launched while 30% of respondents cited no change in their level of understanding of the rules of the TCMP.



Fifty percent of respondents expressed the opinion that there has been a change in compliance with rules and regulations of the TCMP since their active enforcement subsequent to the re-launch in 2006. Fifteen percent of interviewees do not think there has been any change in compliance and 35% do not know if there has been a change at all (

Figure 10). Ninety-four percent of the persons who cited a change in compliance noted there was an overall increase in compliance with the other six percent noting a decrease.

Figure 10 Perceived changes in compliance with rules and regulations since the 2006 re-launch of the TCMP

The majority of people interviewed (59%) indicated they report any violations of TCMP rules and regulations they may observe. Forty-one percent stated they do not report observed violations. The

overwhelming majority of respondents (81%) feel they have more of an obligation in reporting any violations they may see since the re-launch of the TCMP in 2006. Nineteen percent do not feel an increased obligation for reporting observed violations.

Illegal fishing (28%) within the park and speeding above the five knots limit (20%) are two of the most frequently broken rules in the TCMP. Illegal entry and all other categories each represented three percent of respondents. “Other” violations include anchoring on reefs and improper disposal of garbage. The question on rules and regulations of the TCMP that are most frequently broken had a poor response rate with 46% of respondents unable to provide responses (Figure 11).

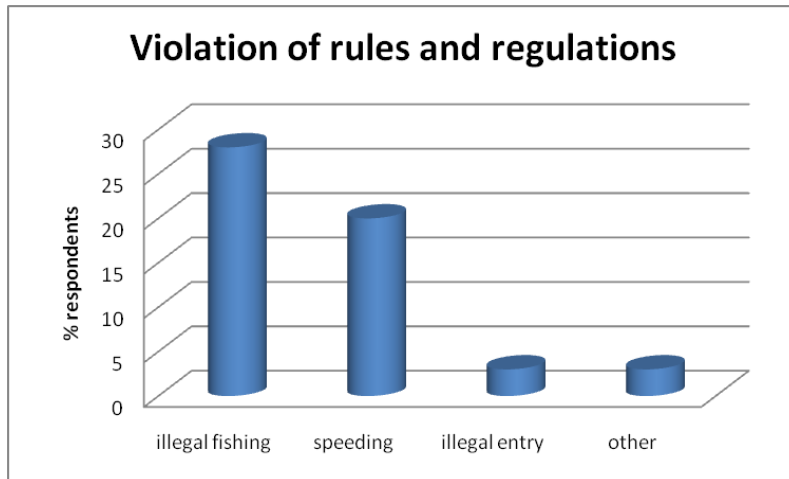


Figure 11 Common violations within the TCMP

Response rate was again quite poor regarding main concerns in the TCMP and suggested solutions for such. However, the concerns expressed by stakeholders who responded included, insufficient security and enforcement, conflicts and conflict resolution, cleanliness and sanitation. The respondents noted these concerns could be addressed by adding more ranger patrols including night patrols; establishing a dress code for persons dealing with food; hiring cleaners for the beaches and constructing a modern toilet facility.

3.3.2 Enforcement

When asked to rate the ability of the rangers employed by the TCMP to enforce the rules and regulations of the MPA, over half of the respondents combined (54%) gave them a rating of “very good” and “good”, 33% rated the rangers ability as “fair” and 12% rated their ability to enforce park rules as “poor” (Figure 12).



Figure 12 Respondent rating of park rangers ability to enforce TCMP rules and regulations

A large percentage of persons surveyed (58%) believe there is a need for better enforcement coverage of the marine park. However it should be noted that there is also a fairly large proportion of people (42%) who believe that better enforcement coverage is not necessary.

The overwhelming majority of respondents (82%) said they feel safe and secure in the TCMP. A small proportion of respondents does not feel this way or are uncertain as to their feelings of safety and security in the area (9% each). Seventeen persons provided reasons for their feelings of safety and security or feelings of lack of safety or insecurity within the TCMP. Of those, 88% noted they feel safe and secure due to the presence of rangers and 12% noted they feel unsafe and insecure in the TCMP due to the absence of night patrols.

3.4 Demographics

Thirty-seven percent of the persons surveyed were between the ages of 41-50; 26% between the ages of 30 and 40; 23% percent over the age of 50; and 11% percent under the age of 30. Three percent of the respondents did not respond to the question. Seventy-four percent of respondents were male and the other 26% percent were female.

Fourteen percent of respondents indicated that the last educational institution they attended was at the tertiary level; 37% at the secondary school level and 49% at the primary school level. When segregated by gender, primary school was the last educational institution attended by the majority of males (54%) followed by secondary school (38%) and tertiary institutions (8%). In the case of females, 45% indicated that primary school was the last institution attended, 22% attended secondary school and 33% attended a tertiary institution (Figure 13).

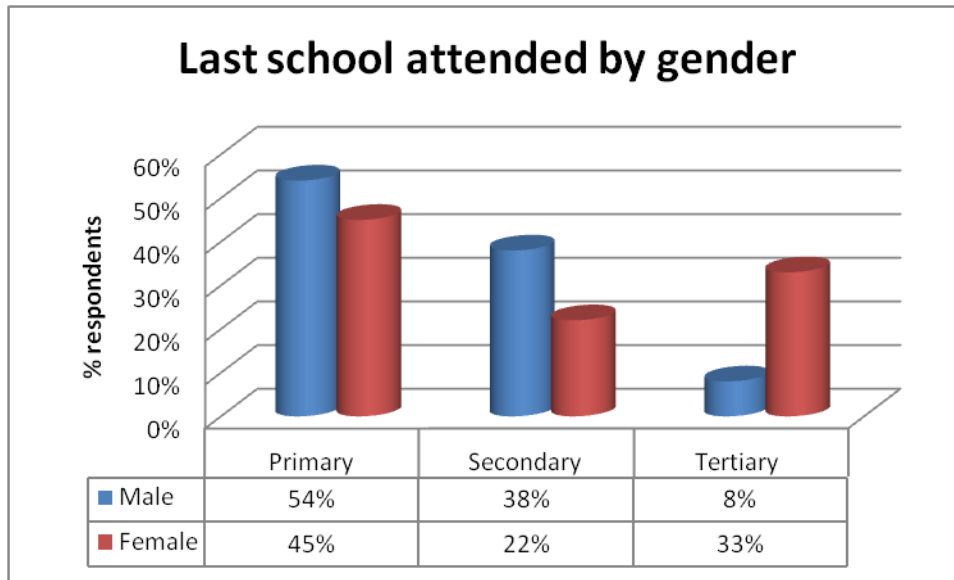


Figure 13 Educational level segregated by gender

The household size for the respondents in this study ranged from one person up to seven. Fifty-four percent of the households were occupied by two persons, 20% by one person, 14% by three persons and 6% by four and seven persons each.

Fishing was the largest income generating activity for 37% percent of households, followed by tourism (34%), public service and then miscellaneous activities (9% each). Eleven percent of respondents elected not to indicate which activity generated the largest income within their households.

Most people interviewed have been operating in or using the TCMP for six, twenty and thirty years (22% each).

4 DISCUSSION AND CONCLUSIONS

4.1 Perceptions of changes in the conditions of marine resources and user numbers

The on-going coral reef monitoring, Reef Check, conducted within the TCMP has shown that there is a statistically significant increase in the abundance of fish and an increase in fish size classes over the past seven years since formal monitoring has been conducted. This confirms the observations made by a larger proportion of respondents in which they note an increase in the abundance of juvenile fish within the Tobago Cays since 2006. Consistent monitoring of the coral reefs of the TCMP began in 2005 and given the relatively slow growth rate of coral, it is a little more difficult to document changes in the health of the reef. However, over the duration of surveys that have been conducted, there has not been a statistically significant change in the percent live coral cover within the TCMP. It is important to note that the percent nutrient indicator algae has been reduced at several sites, which may be a function of increased parrot fish abundance and is a sign of good reef health.

This correlates favourably with respondent observations, in which less than half indicated a change in coral reef condition pointing perhaps to some degree of uncertainty amongst most respondents in gauging perceptible changes in reef health. Greater than half of the persons interviewed thought reef health had improved since the re-launch. These perceived changes in coral reef health and fish abundance in the TCMP, corroborated by scientific data, may also be attributed to people's increased understanding of the coastal and marine ecosystems that comprise the marine park. Since the re-launch of the TCMP in December 2006, a very conscious effort was made to ensure that stakeholders and the general public were aware of the existence of the MPA along with its objectives, rules and regulations. To this end a formal education officer was hired to fulfill this function and an active public education and awareness campaign was launched. One could therefore logically argue the fact that the increase in knowledge of the marine ecosystems by the majority of respondents is the fruits of this campaign.

Most of the respondents expressed the belief that the number of divers utilizing the TCMP has decreased since 2006. In actuality, the number of divers has increased since 2006 when the MPA was rededicated and following the global trend of divers wanting to dive in MPAs as they are viewed as having the best dive sites (i.e. a lot of live coral and large fish) due to the prohibition of fishing. The TCMP does not currently collect statistics on actual number of divers in the marine park but recent information from dive shops has noted an increase in divers in the area. The fact that respondents cited a decrease may be as a result of confusion as locally diving and spearfishing are used interchangeably. Based on this notion, it is possible to explain why the respondents would say that the number of divers has decreased since 2006. In other words, what the respondents are saying is that since 2006, the number of spearfishers utilizing the TCMP has decreased.

Despite the perception of the respondents that the number of yachts visiting the MPA has decreased since 2006, the TCMP yacht registry indicates that 6779, 4742, 7773, 8399, 7905 and 8636 yachts visited the TCMP annually between 2007 and 2012 respectively. This highlights the fact that the number of yachts visiting the MPA has steadily increased since 2006 with the exception of 2008 in which there was a decline following the global economic downturn and a slight decline in 2011.

4.2 Level of stakeholder participation and satisfaction in management, and perceptions on enforcement, compliance and security

Just over half of the stakeholders interviewed feel they have had or could have an influence on management of the TCMP. However, a fairly large proportion, do not believe they have an influence on TCMP management. Additionally, stakeholder involvement in meetings and discussions with TCMP staff about management of the marine park and issues since its re-launch has been fair with just over a third of stakeholders indicating full or some involvement. This is similar to the level of stakeholder participation assessed in 2006 prior to the re-launch of the TCMP in an evaluation of management effectiveness (Pena 2006). This is one area therefore that TCMP management should pay attention to as it continues to implement the current management plan since improvements in stakeholder participation do not seem to have been realized. The involvement of the public and other stakeholders is promoted under the TCMP management plan (Hoggarth 2007). Increased involvement of stakeholders in decision-making and management of the MPA can only improve the success of the TCMP. Solutions

developed in partnership with resource users are more likely to be well adapted to the local area and are more likely to be accepted by those users than “top-down” approaches (Hoggarth 2007).

There is an overall feeling amongst the overwhelming majority of stakeholders that the management of the TCMP has improved since the re-launch of the park in 2006. This includes the fact that over half of the respondents believe the park plays a positive role in conflict management (i.e. between stakeholders) and that the rangers possess the ability to effectively enforce the rules and regulations of the TCMP. This is further confirmed by the fact that almost all of the interviewees believe there has been an increase in compliance. The results of this SocMon study positively correlate with that of an activity undertaken by the TCMP in early 2012 as part of the CERMES MPA Governance project in which a similar sample of stakeholders were surveyed to, among other things, assess current level of stakeholder participation in governance at the TCMP (Harvey and Williams 2012). In this study, the majority of people interviewed considered themselves to be stakeholders, believed they had some form of influence over TCMP management and thought the marine park was being effectively managed. Prior to the re-launch, a management effectiveness evaluation conducted at the TCMP indicated low satisfaction with management (Pena 2006). It is therefore encouraging to see that efforts towards improving management at the marine park have been made and achieved based on stakeholder perceptions.

As mentioned in the previous section, since the re-launch of the TCMP in December 2006, an MPA awareness campaign was implemented. This campaign may be judged as being successful given the increased understanding of MPA rules and regulations amongst the majority of stakeholders interviewed and resultant perceived increase in compliance with rules and regulations. However, note should be made of the still significant proportion of stakeholders who indicate no change in their understanding of rules and regulations. Perhaps it is time for the TCMP to repeat and refresh its public education efforts to further increase MPA awareness among TCMP stakeholders and the general public. When stakeholders are aware of and have an understanding of the rules and regulations for management of the MPA, there is a greater chance for success of the MPA (Pomeroy et al. 2004).

The overwhelming majority of persons interviewed feel they have more of an obligation in reporting violation of rules and regulations in the TCMP. This augers well for TCMP management and suggests there is a sense of ownership and stewardship of the marine park felt amongst stakeholders. The TCMP should build on this by perhaps sharing surveillance, monitoring and enforcement activities with stakeholders. This can be effective in controlling non-compliance behaviour through social and peer pressure. Increasing stakeholder participation in these areas of MPA management will heighten their sense of ownership of the TCMP which should result in an overall improvement in enforcement and a continued decrease in violations (Pomeroy et al. 2004).

As noted previously, just over half of the respondents rated the rangers ability to enforce rules and regulations highly. However, it should be noted that fairly significant proportions of stakeholders also rated ranger ability as either fair or poor. Additionally, over half of the respondents feel that more rangers are needed for better enforcement coverage of the marine park. Furthermore, although the majority of persons feel safe and secure in the TCMP due to the presence of the rangers, some persons

have noted a need for night patrols. Therefore there is room for improvement regarding enforcement of rules and regulations in the TCMP. This too was identified by Harvey and Williams (2012).

4.3 Demographics

Although 49% of persons indicated the last school they attended to be primary, it is important to note that a secondary school (junior) was first established on Union Island in 1972. Prior to that in order to attend secondary school, one had to move to mainland St. Vincent and this was very prohibitive due to the cost to an average family. Consequently, most students at that time would complete primary school, sit their “school leaving exams” and that would be the end of their educational career. Given the age distribution of the study population, that would most likely put over 50% of the interviewees in that group.

Fishing continues to be one of the most important sectors in the Southern Grenadines and in the case of our interviewees it is the largest income generator in 37% of households followed by tourism. This may be as a result of the seasonality of tourism whereas fishing is executed year round targeting different species determined by their open seasons. It is also important to note that a significant percentage of fishers transition from fishing to water taxi operation during the peak of the tourist season as the currency exchange makes it very lucrative. The diversification of livelihoods by fishers to include water taxi services serves to reduce fishing pressure on near-shore marine resources and provides significant cash injection to the community.

5 RECOMMENDATIONS FOR MONITORING AND ADAPTIVE MANAGEMENT

Given the fact that a significant percent of our primary stakeholders may not have attended secondary school, a special effort must be made to ensure that our public engagement and awareness campaign is written in a manner that makes it accessible and understandable to them. This may require the use of audio visual media as the primary means of reaching our target audience; that is, radio, videos and power-point presentations instead of the conventional brochures and flyers.

The diversification of livelihoods is something that should be encouraged and facilitated by the TCMP, especially for the community of Mayreau where fishing provides in excess of 90% of overall income to the island. Another area that could be explored as a livelihood project for fishers affected by the no-take MPA is that of the largely underexploited larger pelagic fisheries via the use of Fish Aggregating Devices (FADs).

Based on the over 60% increase in knowledge of the MPA rules and the marine ecosystem cited by respondents, the public awareness campaign is very effective however, there is still significant room for improvement. The public awareness campaign should include the findings of both bio-physical and socio-economic studies that have been and are being conducted in the MPA. This should especially target fishers as the closure of the MPA would have had the largest negative effect on that sector. Updating them on the positive impact of the MPA on fish stocks and overall reef health would illustrate to them that the sacrifice they are making is not in vain.

Through this project, the TCMP has used and developed a core set of variables that may be monitored every three to five years as recommended by the SocMon Caribbean methodology to assist with the effective management of the TCMP. The variables measure changes in stakeholder attitudes towards, and perceptions of management which are critical to determining MPA management success. SocMon should therefore be sustained at the TCMP to collect socio-economic information on management effectiveness as well as other aspects of coastal management. In addition, SocMon could be used in conjunction with the *How is your MPA doing?* evaluation methodology (previously used at the TCMP) to develop a profile of and trends in management effectiveness and aid in the adaptive management of the TCMP.

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7 APPENDICES

Appendix 1: Survey

Date: _____



ID: _____ Q#: _____

Socio-Economic Monitoring in the TCMP Stakeholder Surveys

This survey is being done by the Tobago Cays Marine Park (TCMP) in order to get a better understanding of the impact of the TCMP on the livelihoods of its stakeholders. The information collected will be used to better manage the Park. You will not be identified in any reports and any information that you provide cannot be traced back to you. After this survey is completed, a copy of the report will be available to the public, for you and others to see, at the TCMP office.

Perceptions of changes in the conditions of marine resources

1. Since the re-launch of the TCMP in 2006, my understanding of the coastal and marine ecosystems of the TCMP has increased decreased not changed at all
2. Identify, if any, the change in the number of people using the TCMP for different purposes listed below since 2006?
 - a. More fishers Less fishers No Change Don't know
 - b. More divers Less divers No Change Don't know
 - c. More yachts Less yachts No Change Don't know
3. Have you observed a change in the number of young fish within the Park over the past six years?
 Increased Decreased Remained the same Don't know?
4.
 - a. Have you observed a change in the health of coral reefs in the Park over the past six years? Yes No Don't know
If YES, go to parts (b) and (c). If NO, go to part (c).
 - b. If YES, how has it changed? Improved Deteriorated
 - c. Give reasons for your answer.

Date: _____

ID: _____ Q#: _____

Level of stakeholder participation and satisfaction in management

5. Why do you choose the TCMP for your activities?

6. Did you participate in or were you involved in TCMP management or any decision-making activities prior to 2006? () Yes () No

7. To what extent have you been involved in meetings and discussions with TCMP staff about management of and issues in the TCMP since its re-launch in 2006?

8. Do you think you have had or could have an influence on management of the Marine Park? () Yes () No () Don't know

9. Over the past six years, how willing has TCMP staff been to listening to your views about the TCMP? () Very willing () Somewhat Willing () Not Willing

10.
a) Do conflicts occur within the TCMP? () Yes () No () Don't know

b) If YES, what are the three most common types of conflicts in the TCMP?

1. _____
2. _____
3. _____

11. Has management been successful in reducing or preventing conflicts?
() Yes () No () Don't know

12. In what way, if at all, has management of the TCMP changed since the Park was re-launched in 2006? () Improved () Deteriorated () No Change

13.
a) In your opinion, is adequate precaution (eg. Life jackets, # of passengers) being taken by water taxi operators when carrying passengers? () Yes () No

b) If NO, please explain.

Date: _____

ID: _____ Q#: _____

Stakeholder perceptions on enforcement, compliance and protection (security)

14. Do you have a better understanding of rules, regulations and enforcement arrangements now, compared to before the re-launch of the TCMP in 2006? () Yes () No

15.

a) Would you say that people's compliance (respect/obedience of) with TCMP rules and regulations has changed since the TCMP was re-launched in 2006?
() Yes () No () Don't know

b) If YES, how has compliance changed?
() Increased () Decreased () No change

16.

a) Do you report any violations of TCMP rules and regulations you may observe in the park? () Yes () No

b) Since the re-launch of the TCMP in 2006 do you feel you have more of an obligation in reporting any violations you may see? () Yes () No

17. In your opinion, what are the three rules that are broken most frequently in the TCMP?

1. _____
2. _____
3. _____

18. Provide one of your main concerns about what is happening in the TCMP and suggest a solution to this concern. *Concerns should focus on enforcement, compliance and security.*

<i>Top concern</i>	<i>Suggested solution</i>

19. How would you rate the park rangers' ability to enforce park rules?

() Very Good () Good () Fair () Poor

20. Do you think more park rangers are needed for better enforcement coverage of the Marine Park? () Yes () No

21.

a) Do you feel safe and secure in the TCMP?
() Yes () No () Don't know

b) Please explain your answer.

3

Date: _____

ID: _____ Q#: _____

Household Demographics

22. Sex: () Male () Female

23. Age: () Under 30 () 30 - 40 () 41- 50 () Over 50

24. What was the last school you attended?

() Primary

() Secondary

() College

() University

() Other, please specify _____

25. How many persons over the age of 16 live in your home? _____

26. What type of work provides the most income to your household? _____

27. What was/is your main income producing activity in TCMP? _____

28. How long have you been operating in or using the TCMP? _____

Thank you for your help!



Appendix 2: SocMon Caribbean survey variables selected for monitoring

Variable no.	Variable name
S1	Age
S2	Gender
S4	Education
S8	HH size
S9	HH income
S16 (revised)	Perceptions of resource conditions
S18 (revised)	Awareness of rules and regulations
S19	Compliance
S20 (revised)	Enforcement
S21 (revised)	Participation in decision-making
S23	Perceived coastal management problems
S24	Perceived coastal management solutions
S25	Perceived community problems
S26	Successes in coastal management
NEW	MPA knowledge and awareness
NEW	Types of and changes in MPA livelihoods
NEW	MPA changes or impacts
NEW	Best practices
NEW	MPA user frequency and type of MPA use(s)
NEW	Perceptions of changes in species abundance

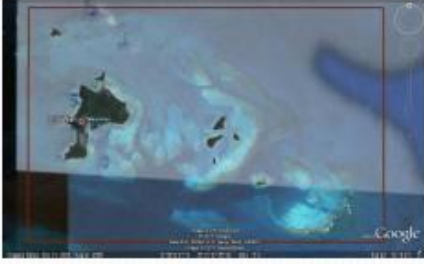
Appendix 3: Validation meeting slides

Baseline Socio-economic Monitoring for the Tobago Cays Marine Park

Olando Harvey, Kenneth Williams & Althea Nanton
Tobago Cays Marine Park (TCMP)
March 1st, 2013
Validation Meeting



TCMP Boundaries



2012 TCMP SocMon

➤ **Monitoring Goal:**

- To develop a core set of socio-economic indicators to assist with the effective management of the TCMP.

➤ **Monitoring Objectives:**

- To determine stakeholder perceptions of the marine resources since the MPA re-launch in 2006.
- To determine the level of stakeholder participation and satisfaction in the management of the MPA.
- To determine the perceptions of stakeholders on the level of enforcement and protection (security) within the TCMP.

Stakeholder Surveys

- 25 surveys were conducted on Mayreau, Union Is. & TCMP
- Stakeholder groups interviewed included:
 - Water/Taxi
 - Vendors
 - Fishers
 - Dive Operators
 - Day Tour Operators
 - Hotel Operators

Stakeholder Surveys

Socioeconomic Monitoring Indicators

Household Demographics

- Age
- Gender
- Education
- Household size
- Household income

Coastal and Marine Activities

- Frequency and type of MPA use(s)
- Perceptions of changes in species abundance

Knowledge and Awareness

- MPA knowledge and awareness
- Awareness of rules and regulations

7

Attitudes and Perceptions

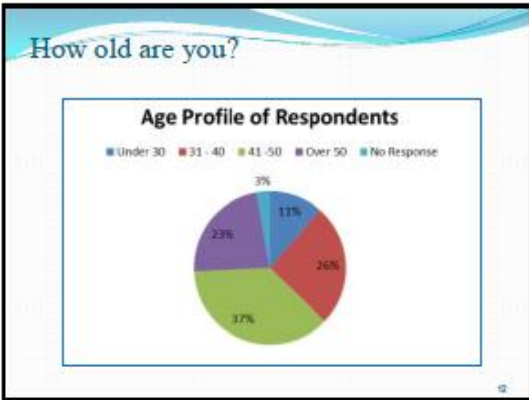
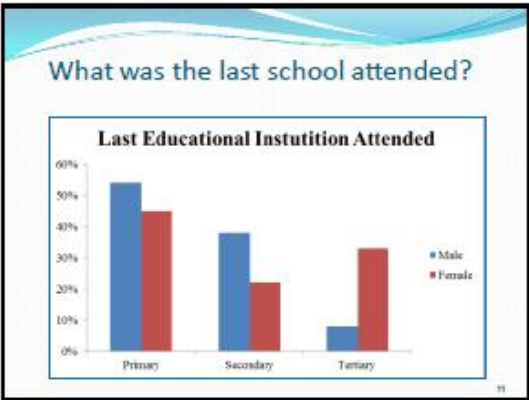
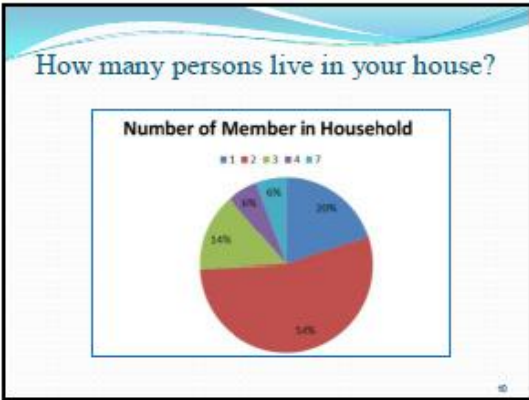
- Perceptions of resource conditions
- Perceived threats to the MPA
- Compliance with MPA rules & regulations
- Enforcement of MPA rules & regulations
- Stakeholders participation in decision-making
- Perceived coastal management problems
- Perceived coastal management solutions

8

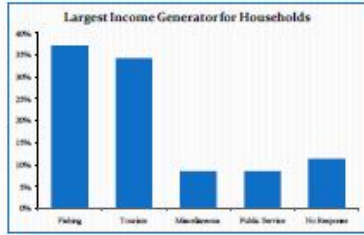
Preliminary Findings

Demographics

9



What is the largest Income generator?



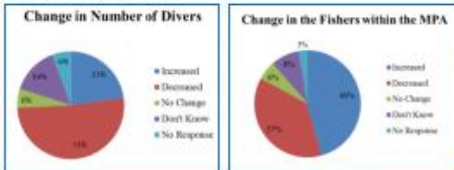
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Preliminary Findings

Coastal & Marine Activities

14

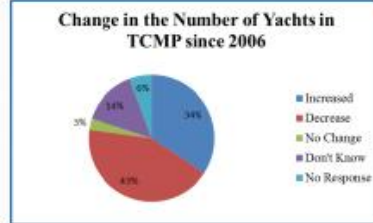
Has the number of fishers changed?



Since 2006 the number of fishers have actually decreased due to enforcement of the no-take regulations. Divers and spear fishers are used interchangeably, therefore, the change in divers might actually represent the reduction in the number spear fishers.

15

Has the number of yachts changed?



The number of Yachts visiting the park has been steadily increasing with the exception of 2008 & 2009 (TCMP Yacht Registry).

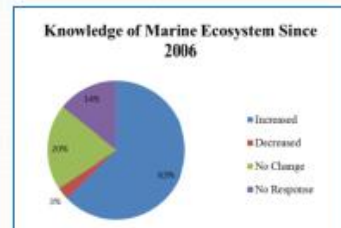
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Preliminary Findings

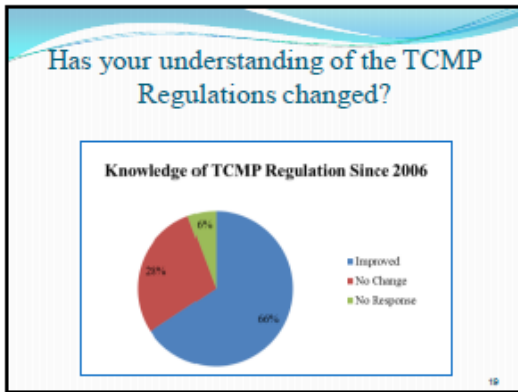
Knowledge & Awareness

17

Has your understanding of the Marine Ecosystem changed?



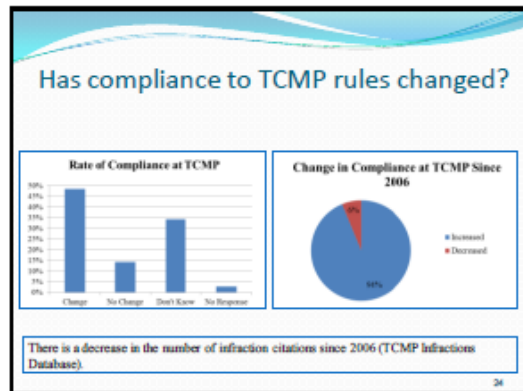
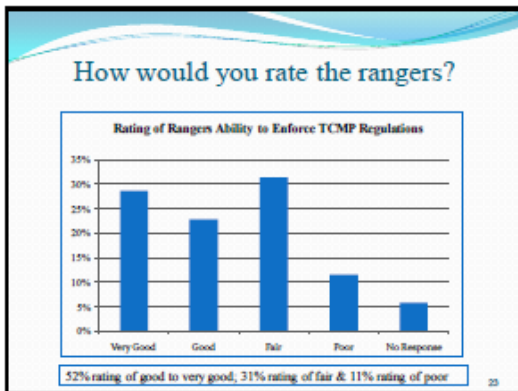
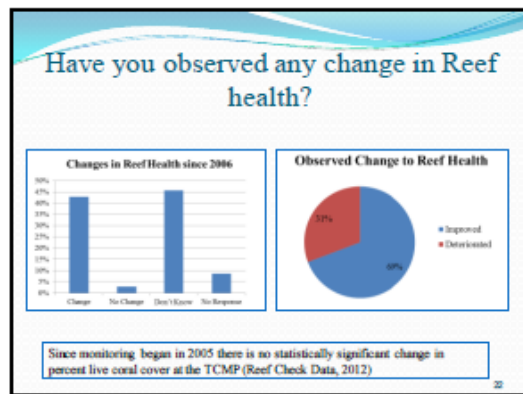
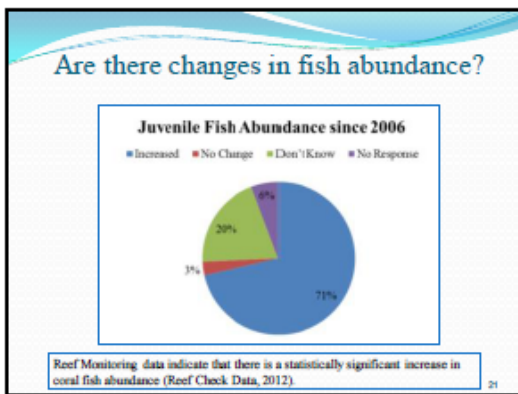
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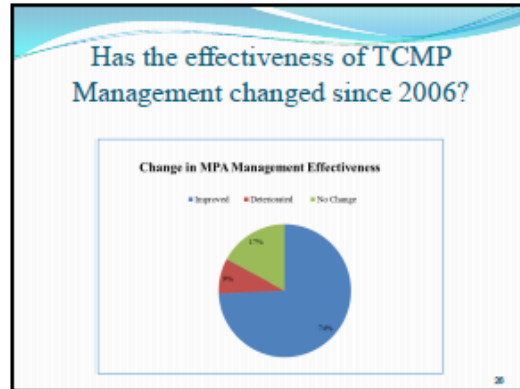
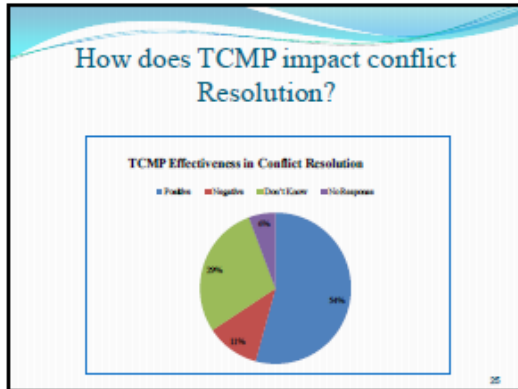


Preliminary Findings

Attitudes & Perceptions

20



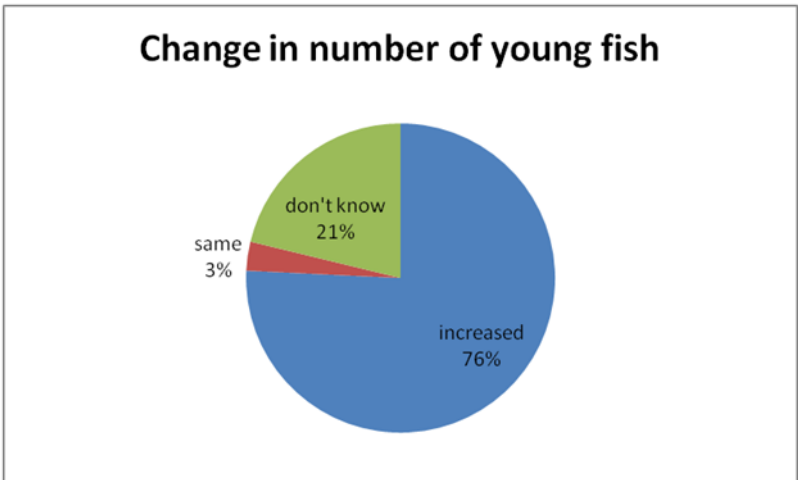
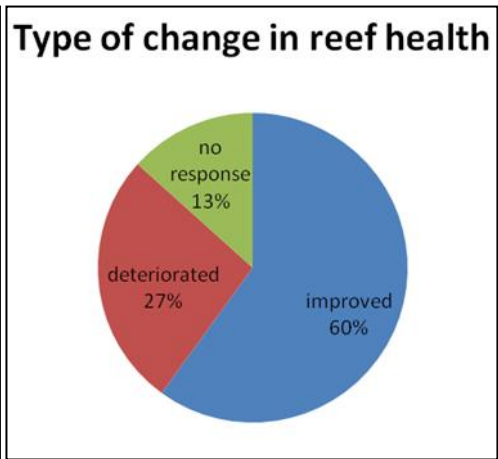
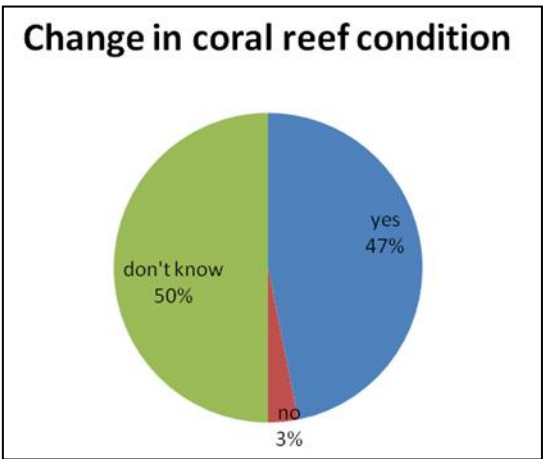
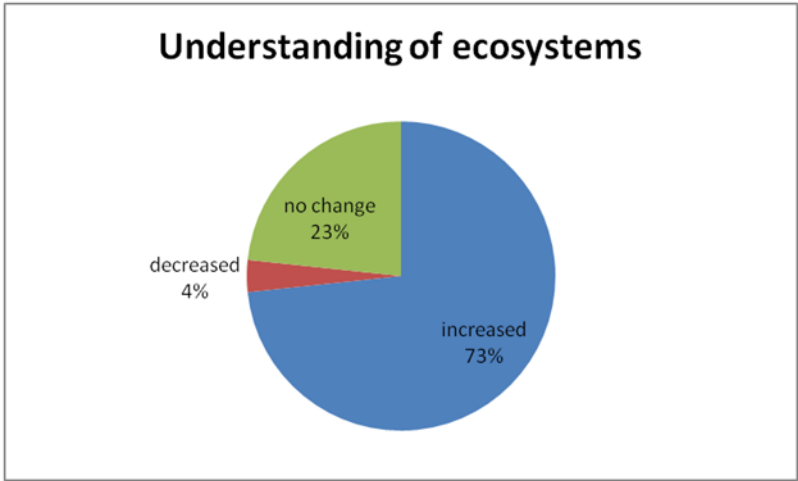


Thank You!

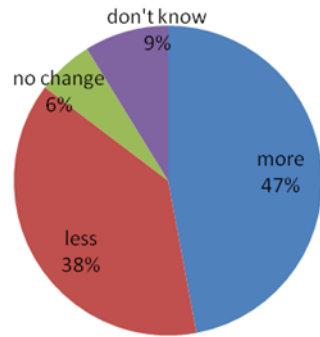



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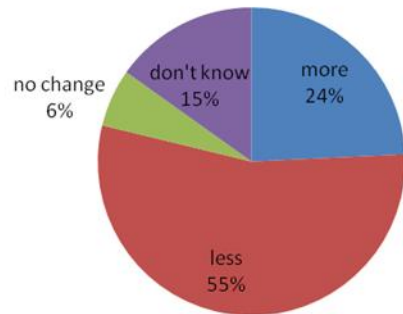
Appendix 4: Graphs from survey analysis



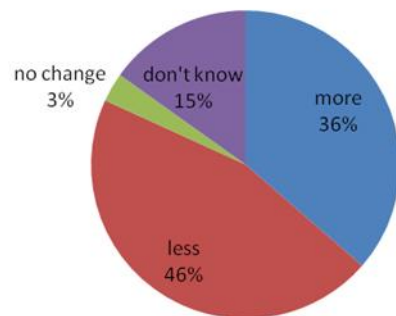
Change in number of fishers

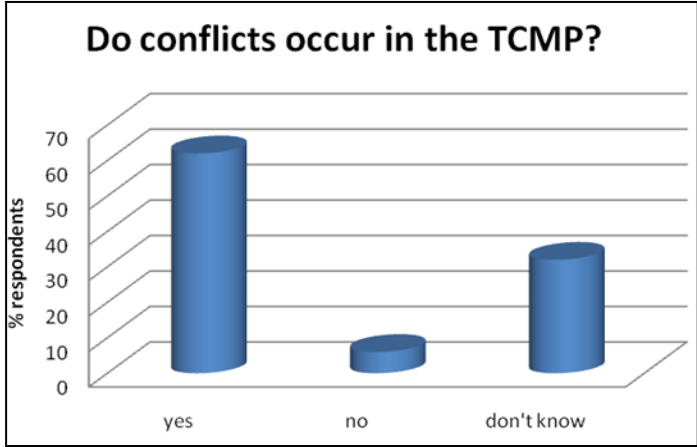
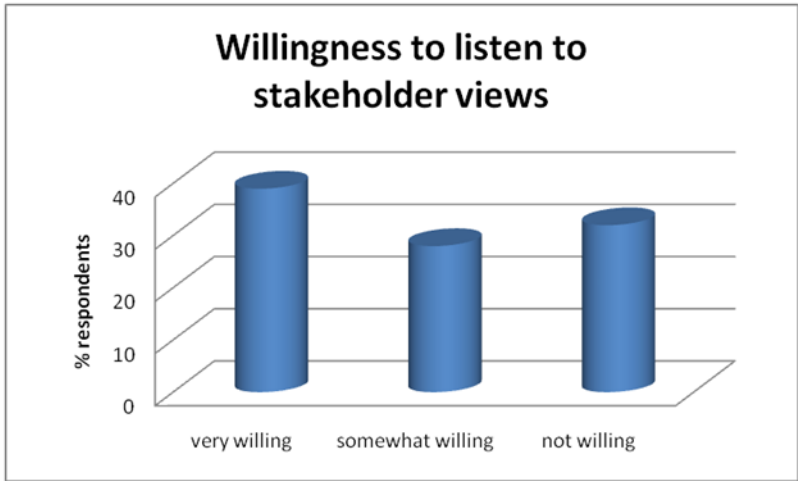
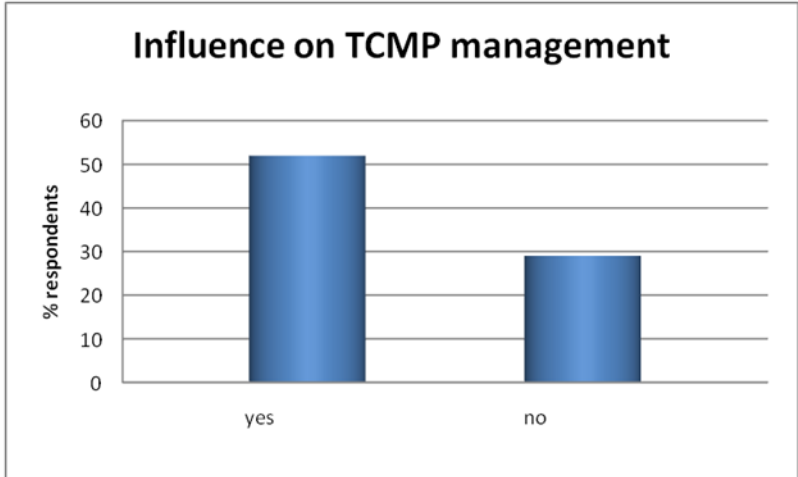


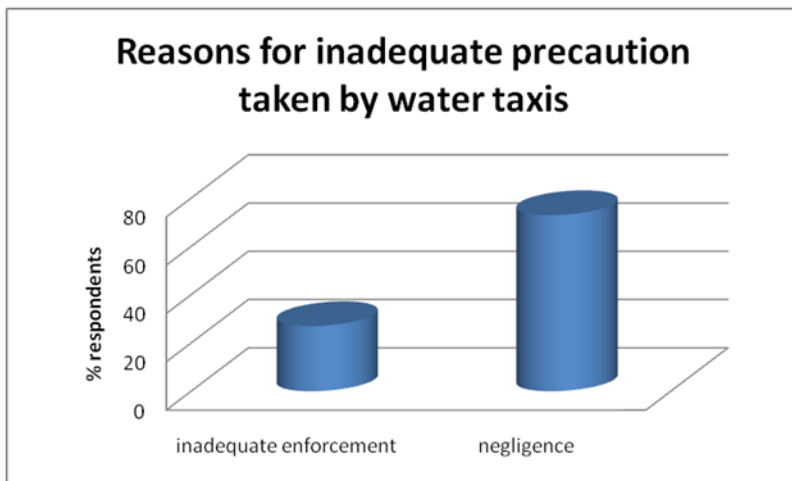
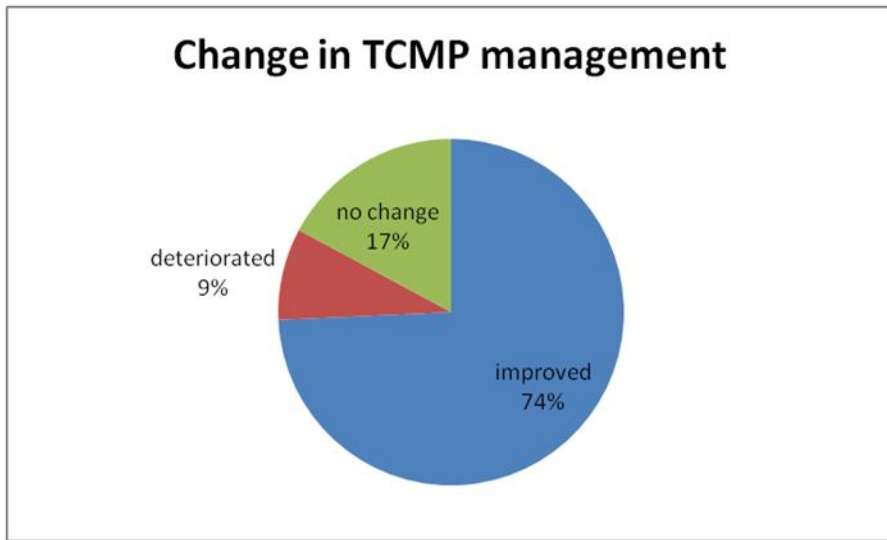
Change in number of divers



Change in number of yachts



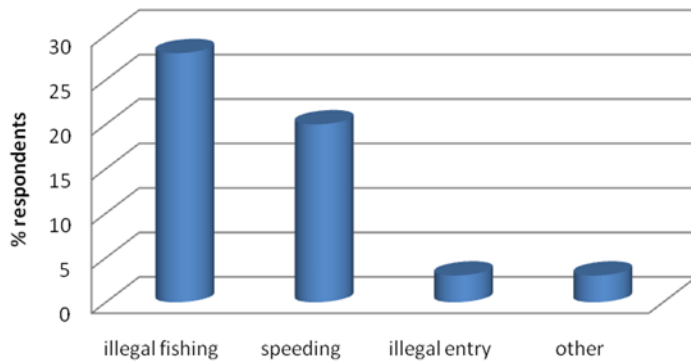




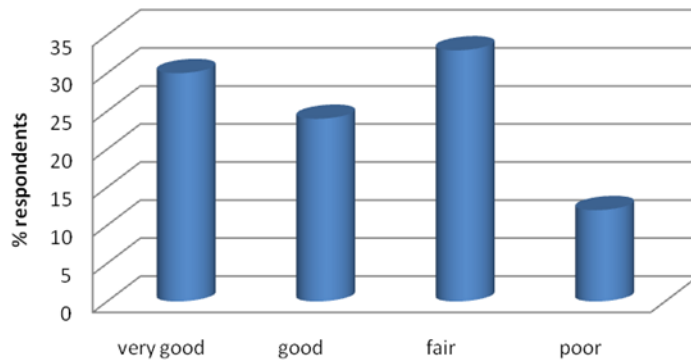
Change in compliance with rules and regulations



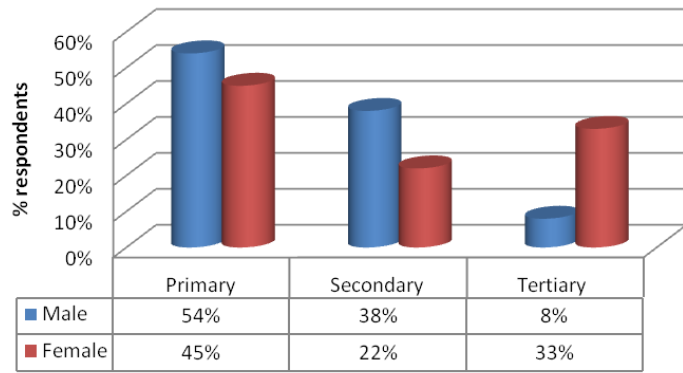
Violation of rules and regulations



Park ranger's ability to enforce rules



Last school attended by gender



Appendix 5: SocMon project costs

Description of expense	No. of units	Unit cost (USD)	Total cost (USD)
<i>Preparatory and validation activities</i>			
Stationery/posters/brochures for project announcement	4 posters	15.00	60.00
	50 flyers	1.00	50.00
<i>Stakeholder community meeting</i>			
A/V equipment	1	50.00	50.00
Venue	1	100.00	100.00
Refreshments	40	4.00	160.00
Transportation (Mayreau return)	1	200.00	200.00
<i>Enumerator training</i>			
A/V equipment	1	50.00	50.00
Venue	1	100.00	100.00
Refreshments	10	10.00	100.00
Consultant stipend (survey design)	1	400.00	400.00
<i>Interviews and observation</i>			
Interview stipend (survey design)	35	10.00	350.00
Stationery for surveys	2 reams	10.00	20.00
Ink for printing surveys	1 set	110.00	110.00
Transportation (Mayreau and Tobago Cays return)	2	200.00	400.00
<i>Validation meeting</i>			
A/V equipment	1	50.00	50.00
Venue	1	100.00	100.00
Transportation (Carriacou return)	1	200.00	200.00
Total SocMon costs			2500.00