

Centre for Resource  
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University of the West  
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St. Vincent and the  
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Carriacou  
Environmental  
Committee

Carriacou, Grenada



# ***THE SUSTAINABLE GRENADINES PROJECT***

SUSTAINABLE INTEGRATED DEVELOPMENT AND BIODIVERSITY  
CONSERVATION IN THE GRENADINE ISLANDS

**Coral Conservation Awareness in the Grenadines**

Report of

**The evaluation of the use of the People and  
Corals workbook**



**CERMES**  
March 2007



## **ABSTRACT**

The people of the Grenadine islands depend on coral reefs for their livelihoods as it is a fishery resource for fishermen and generates income and employment from marine-based tourism. Despite this, the significance of healthy coral reefs is poorly understood at all levels of society. People are unaware of the link between anthropogenic activities and degradation of the environment and this makes environmental education increasingly important. The Caribbean Conservation Association (CCA) has taken up the initiative to develop an education pack (People and Corals) that is a resource for coral reef education for children in primary schools. The workbook is an ideal way to formally educate children of the Grenadines about coral reefs and the need to protect the resource.

This project seeks to promote and improve coral reef conservation by establishing a coral reef education program in primary schools. The children will be introduced to concepts such as awareness of the value of coral reefs for livelihoods, threats and practices for coral conservation. The methodological approach was to train the teachers of 14 primary schools throughout the Grenadines to use the People and Corals workbook, acquire and provide the copies of the workbooks to the participating schools to be use for a period of time and finally to assess the teachers' and students' experiences, perceptions and any impact made while using the workbook. The workbook was proven to be teacher-friendly providing all the resources necessary for coral reef education. It also has the capability to positively impact on the students' values and attitudes towards coral reefs by increasing their awareness which will help them make better environmental decisions in the future.

It was concluded that the use of this workbook was an effective step to facilitate coral reef conservation in primary schools. Lessons learnt were identified to assist in the implementation of the workbook in other primary schools of St. Vincent and Grenada. Future work is required to determine whether the use of the workbook has led to changes in behaviour of the students over time and whether sharing the knowledge with friends and family has changed any attitudes or behaviours of his/her family/friends towards the environment. Recommendations were made to continue the use of the workbook in primary schools and also a framework for establishing a coral reef education program in primary schools.

**Keywords: coral reef education, Grenadines, primary schools**

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The funds for this project were provided by:

- § The National Fish and Wildlife Foundation, USA
- § The Caribbean Environmental Programme, United Nations Environmental Programme, Jamaica
- § The Lighthouse Foundation, Germany, and
- § The Centre of Resource Management and Environmental Studies, UWI, Barbados

Citation:

Blackman, K. 2007. The evaluation of the use of the People and Corals Workbook. Centre for Resource Management and Environmental Studies (CERMES), University of the West Indies, Cave Hill Campus, Barbados, 26 pp.

# 1 INTRODUCTION

## 1.1 About coral reefs in the Caribbean

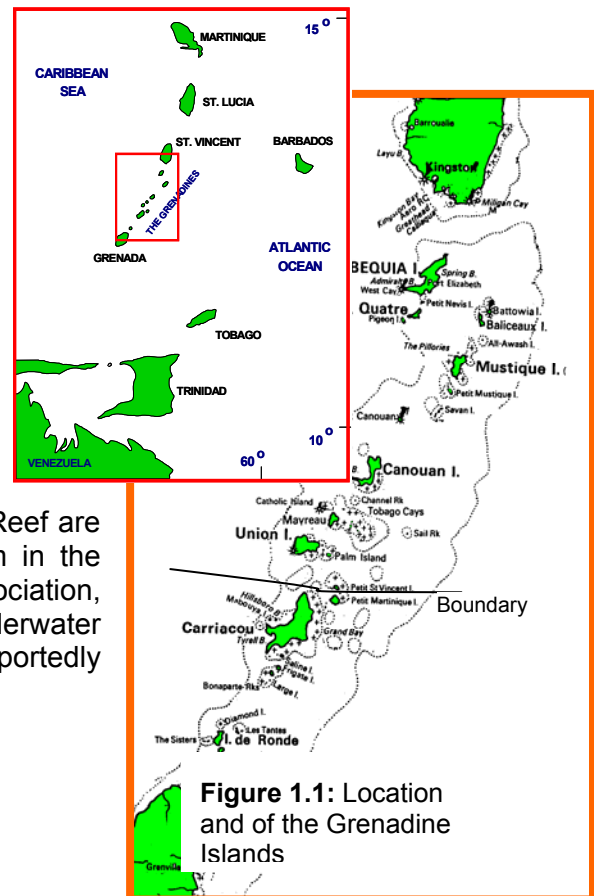
Coral reefs are one of the oldest and most fragile ecosystems on the planet. They provide food and shelter for many marine species of fish and invertebrates; protect the shorelines from erosion due to high energy waves; and produce a skeletal material which through abrasion results in the formation of sand (Goodbody and Thomas-Hope 2002). Coral reefs also provide scenic views for tourists and divers. Nonetheless, perhaps their greatest value is that they provide some of the most valuable fishery products such as lobsters, crabs, conch, groupers and snappers to both large and small communities in the Caribbean.

Despite their importance and persistence over geological time, coral reefs appear to be one of the most vulnerable marine ecosystems. Considerable declines in the health of the coral reefs have been documented from many sites in the wider Caribbean (Smith et al. 1996; Wilkinson 2000; Burke and Maidens 2005). These ecosystems have been affected by natural factors such as storms and hurricanes but the further decline in their health has been perpetuated by anthropogenic factors such as marine pollution, sedimentation, overfishing, use of destructive fishing methods, tourism and climate change. The continued decline in the status of coral reefs will not only affect marine organisms but the livelihoods of Caribbean people, as a healthy environment is critical for fishing and other marine based tourism activities in the Caribbean.

## 1.2 Coral reefs in the Grenadines

The Grenadine island chain is known for its extensive reef system. The transboundary chain lies between the two sovereign nations of St. Vincent and the Grenadines and Grenada (Figure 1.1). The inhabited islands of Bequia, Mustique, Canouan, Mayreau, Union island and Palm Island are a part of St. Vincent while Carriacou and Petit Martinique are the two inhabited islands belonging to Grenada.

The most extensive and well developed reefs in the Grenadines occur on the shallow shelves on the windward side of Mayreau, Union Island and Tobago Cays. Horseshoe Reef and World's End Reef are the best known and most extensive reef system in the central Grenadines (Caribbean Conservation Association, 1991). These reefs have been famous for underwater sceneries but in recent years have been reportedly threatened by anthropogenic activities.

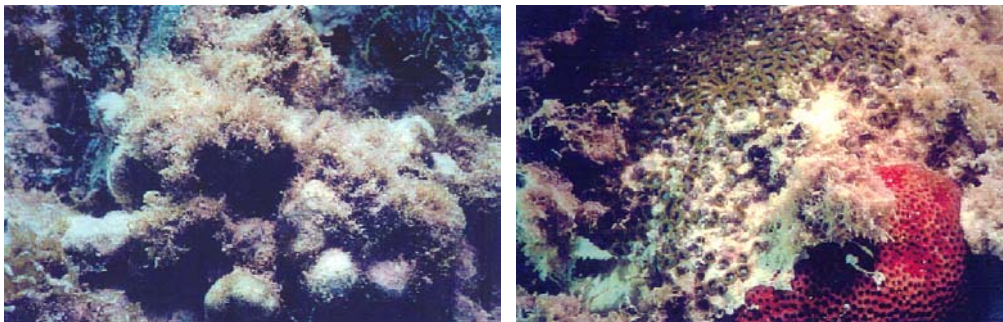




Source: Price and Price, 1998

**Figure 1.2: Reefs around Saline Island and White Island**

Coral reefs are extremely important for the Grenadine islands. Fishing and marine based tourism are economic mainstays of these islands and these activities heavily depend on healthy coral reef ecosystems. Fishing provides a source of income and food for the majority of the Grenadines islands like Bequia, Canouan and Union island (SENJAN Associates and Consultants 1992). On the other hand tourism particularly yachting tourism contributes significantly to communities in the Grenadines such as Bequia and Union Island by providing direct and indirect employment (UNECLAC, 2002). Despite the importance of coral reefs, they have been threatened by many anthropogenic activities and thus suffered serious deterioration.



Source: Price and Price 1998

**Figure 1.3: Reefs threatened by overgrown algae after construction of a marina in Union island**

Over the last decade studies have reported the decline in the status of reefs in the Grenadines due to land-based pollution (Berwick 1986), sewage pollution, sand mining, uninformed coastal development (Price and Price 1998 and Goreau and Sammons 2003); overfishing (Burke and Maidens 2004) and use of destructive fishing practices such as explosives. One of the major reef areas being threatened is the Tobago Cays which are a focal point for marine tourism by attracting yachts, cruise ships and divers. Overuse from both fishing and tourism have damaged the resource e.g. waste dumping, dropping of anchors.

There are some actions being implemented to protect the coral reef ecosystems in the Grenadines. Under the Fisheries Act of St. Vincent nine conservation areas were established including north east coast and Devil's table in Bequia, the entire island of Mustique, east coast of Canouan, all of Mayreau and the Tobago Cays (Simmons 2005). A marine park has been established in the Tobago Cays with the aim of protecting and improving its natural resources. It

is the only legally declared MPA in the Grenadines. While being the only areas under a protection act, the Tobago Cays Marine Park board of management lacks the political support for conservation and the resources and equipment to manage the park.

Other initiatives need to be implemented to help protect coral reef ecosystems. Environmental awareness solely relies on educating the public about the importance of the coral reef resource and how they can play a part to protect it. Awareness can change their perception and values and eventually will change their attitudes and behaviour towards the environment. Furthermore by educating the children we can shape their values, perspectives and understanding of the environment so in the future, they can continue to make decisions in a responsible manner.

### **1.3 Corals reefs and environmental education**

The Tbilisi Declaration (UNESCO, 1978), defines environmental education as, ‘the learning process necessary to improve the knowledge and the awareness on the environmental issues’. It fosters the development of ecological knowledge, skills and experiences needed to address properly resolve environmental problems. It also promotes attitudes and commitments either to make decisions based on reliable information or to implement action plans in a responsible way. Environmental education (EE) needs to be facilitated through all levels of the society, from children to resource users in local communities, as a measure to assist in the protection of coral reefs. EE can result in environmentally responsible behaviour which will counteract negative human impacts that destroy coral reef ecosystems.

### **1.4 Coral Conservation in the Grenadines Primary Schools**

The “Coral Conservation Awareness in the Grenadines” (People and Corals Project) project was conducted by The Sustainable Grenadines Project implemented by the Centre for Resource Management and Environmental Studies (CERMES). The project was initiated to create a coral reef education program in the primary schools of the Grenadines. The main goal of People and Corals project was to promote and improve coral reef conservation in the Grenadine Islands by introducing coral reef conservation concepts and approaches at the primary school level in all islands. Concepts to be introduced included: awareness of the value importance of coral reefs for livelihoods; threats to coral reefs and practices for coral conservation. This will be achieved by providing schools with Caribbean Conservation Association (CCA) “People and Corals” workbook that was developed by the CCA and the UK Field Studies Council for use in Caribbean primary schools.

This project paper is organised as follows: Chapter Two is the methodology for the four phases of the People and Corals Project. Chapter Three describes the results from the teacher’s and student’s survey on their perceptions and experiences while using the workbook. Chapter Four discusses the results and provides a conclusion along with proposed recommendations to use the workbook in schools.

## 2 METHODOLOGY

The project was implemented in four phases: Phase 1 was the purchasing of the workbooks for use in the primary schools; Phase 2 introduced the teachers to the workbook through conducting a training workshop; in Phase 3 the teachers used the book during one school term; and in Phase 4 teachers and students were interviewed about the workbook to gain their perceptions and experiences.

### 2.1 Phase 1 and 2: The workbook and the training workshop

Four hundred and fifty copies of the People and Corals workbook were purchased for the primary schools participating in the project. In September, twenty-four primary school teachers from St. Vincent and the Grenadines and Grenada attended the People and Corals Teachers' Training Workshop in Carriacou from 26<sup>th</sup>-27<sup>th</sup> 2006 to receive training for the use of the People and Corals workbook (Figure 2.1). At the workshop, the teachers were briefed about coral reefs, introduced to the book along with the theory of environmental education and effective learning models (Blackman, 2006). At the end of the workshop twenty-five workbooks were distributed to each of the 16 schools to be used with students ages 9-11.



Figure 2.1: People and Corals Workshop

### 2.2 Phase 3 and 4: The use of the workbook and its evaluation

After the workshop, the teachers were expected to use the workbook with their students at least once a week for the remaining part of the school term to provide feedback on their experiences while using the workbook (Figure 2.2). The evaluation was conducted from 29<sup>th</sup> January to 7<sup>th</sup> February 2007. Fifteen primary schools participated in the evaluation (see Appendix) to determine both the teachers and students response to the People and Corals workbook. One survey was designed for teachers and another for the students. Both surveys focused on the perception of the use of the workbook, the possible impact of the workbook on the students and any suggestions to improve activities or the workbook. The surveys were disseminated to 18 teachers along with five students from each of their classes (a total of 90 students).



Figure 2.2: Students from Mustique who took part in the People and Corals Project

#### 2.2.1 Limitations of the methodology

Several limitations were encountered during the evaluation phase of the project:



(1) Teachers were not monitored at frequent intervals to ensure they were using the book at least once a week. Thus the evaluation survey only focused on the first chapter of the People and Corals workbook which all the teachers completed.

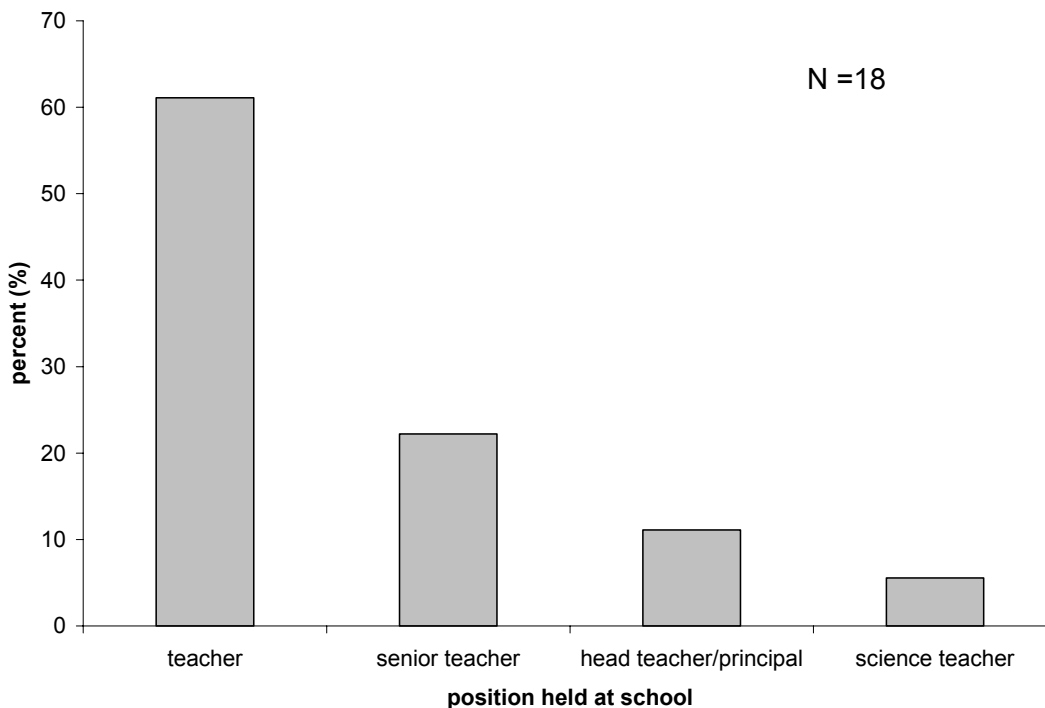
(2) The time period (October-November 2007) to allow the teachers to use the workbook may have been too short to gain adequate feedback and make an assessment of the entire workbook.

### 3 RESULTS

#### 3.1 Teacher's survey

##### 3.1.1 Study population

The majority of teachers (67%) interviewed were from the Grenadines and the majority of the interviewees were general teachers (Figure 3.1). The majority of teachers (72%) were male compared to 28% were female.



**Figure 3.1: Percentage of varying positions held by interviewees at their school**

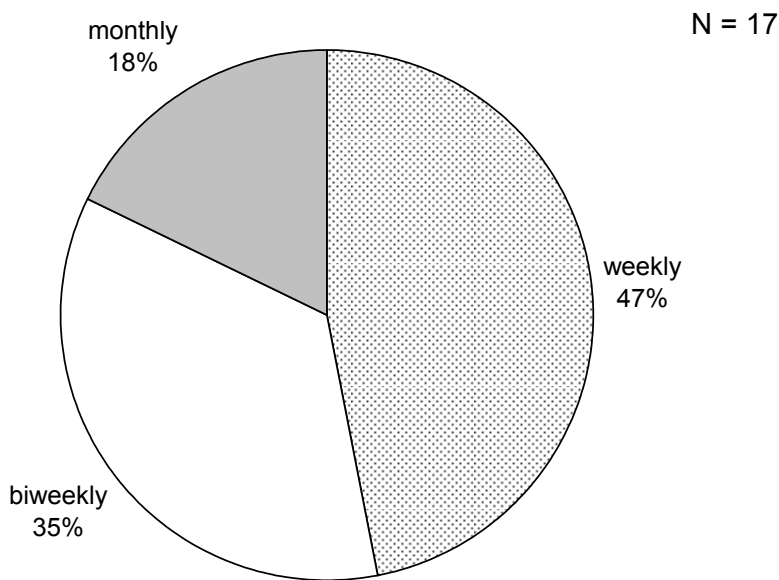
##### 3.1.2 Perception of the People and Corals workbook on a whole

All teachers agreed that the pack could help them educate the children in the Caribbean about coral reefs and that the pack will promote and improve coral reef conservation and protection. Eighty-three percent of the teachers believed the workbook was easy to use while 17% were uncertain of this (Table 3.1).

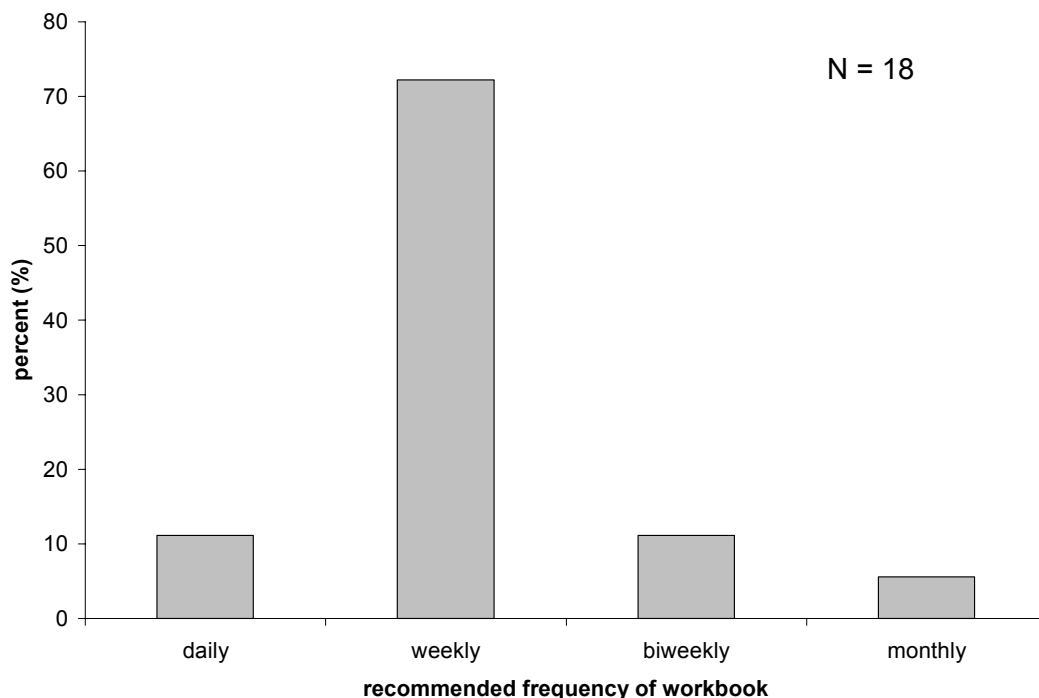
**Table 3.1: Response from teachers who thought the pack was easy to use**

| Response          | Frequency | Percentage |              |
|-------------------|-----------|------------|--------------|
| Strongly disagree | 0         | 0          |              |
| Disagree          | 0         | 0          |              |
| Not sure          | 3         | 17         | 17% Not Sure |
| Agree             | 8         | 44         | 83% Agree    |
| Strongly agree    | 7         | 39         |              |
| Total             | 18        | 100        | 100%         |

All teachers agreed that the pack had good teaching ideas and 89% thought that the pack used methods with which teachers were familiar. Only one teacher disagreed that the glossary helped with understanding unfamiliar terms. While less than half of them (47%) used the book weekly, thirty-five percent used the book biweekly while a mere eighteen percent used the book monthly (Figure 3.2). Seventy-two percent of them stated that the workbook should be used on a weekly basis, (Figure 3.3)



**Figure 3.2: Frequency of which teachers used the workbook during the specified period**



**Figure 3.3: The recommended frequency for the use of the workbook**

### 3.1.3 Impact of the workbook on the students

All eighteen teachers agreed that the workbook has increased the students' awareness about coral reefs. They believed that the students not only understood the importance of coral reefs to our livelihoods but also why we need to protect coral reefs. In addition, they agreed that this workbook could assist in changing the students' attitudes and behaviours towards the coral reefs. The majority of the teachers (88%) indicated that the students made noticeable changes to their thinking or behaviour towards coral reefs and the environment (Table 3.2). They all believed that the students will share what they have learnt about coral reefs with their family and friends.

**Table 3.2: Teachers' responses about the impact of the workbook on the students**

|   | Responses |         |
|---|-----------|---------|
|   | Yes       | No      |
| Students understood the importance of coral reefs       | 100% (17) | 0       |
| Students understood why we need to protect coral reef   | 100% (18) | 0       |
| Noticeable changes in students                          | 88% (15)  | 12% (2) |
| Students will share what was learnt with friends/family | 100% (17) | 0       |
| Workbook will increase students' awareness              | 100% (18) | 0       |
| Workbook will assist in attitudes and behaviour         | 100% (17) | 0       |

### 3.1.4 Overall comments and suggestions for improvement

The teachers selected activities from the workbook and made their review and suggestions about specific activities. The table below reflects the teachers' opinion on five activities (Table 3.3).

**Table 3.3: Review of selected activities in the People and Corals Workbook**

| <b>Activity</b>              | <b>Clear Instructions</b> | <b>Supporting information</b> | <b>Educational objectives covered</b>  | <b>Means of improvement</b>   |
|------------------------------|---------------------------|-------------------------------|--|---|
| Why are corals important?    | yes                       | Adequate to good              | <ul style="list-style-type: none"> <li>- Knowledge and understanding</li> <li>- Skill development</li> <li>- Development of values, attitudes and behaviour</li> </ul> | -Allowing students to bring local pictures depicting the importance of corals       |
| What do polyps need to live? | yes                       | adequate                      | <ul style="list-style-type: none"> <li>- Knowledge and understanding</li> <li>- Development of values, attitudes and behaviour</li> </ul>                              | -Use of visual aids   |
| What is a coral?             | yes                       | good                          | <ul style="list-style-type: none"> <li>- Knowledge and understanding</li> <li>- Development of values, attitudes and behaviour</li> </ul>                              | -Providing adequate information on the activity e.g. definition of coral reefs etc  |
| Who shares our home?         | yes                       | good                          | <ul style="list-style-type: none"> <li>- Knowledge and understanding</li> <li>- Development of values, attitudes and behaviour</li> </ul>                              | none  |
| Trip to fish market          | yes                       | -                             | <ul style="list-style-type: none"> <li>- Knowledge &amp; understanding</li> <li>- Development of values, attitudes and behaviour</li> </ul>                            | -Students should be assigned to smaller groups to better interview the fisherfolks. |

Teachers were asked to make comments on the People and Corals Workbook as a whole. The summarised comments are displayed in Box 3.1.

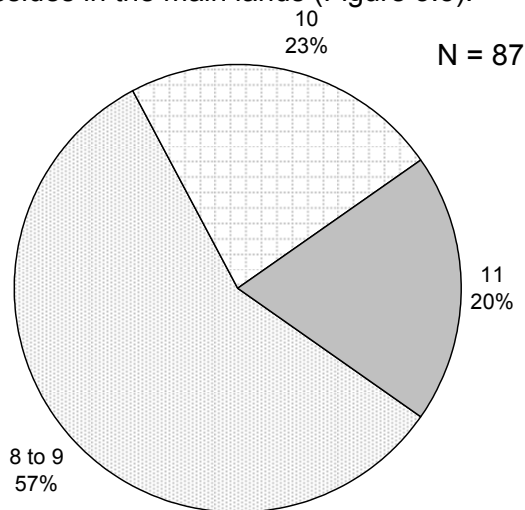
**Box 3.1: Summarised comments from teachers about the People and Corals Pack**

- It is a great package for teachers because the lessons are interesting, a resource area is provided along with a glossary and worksheets.
- Very teacher-friendly and the resources were well put together
- Students should have their own workbooks or the worksheets should be in a separate folder so as to allow the pupils to better use them.
- Good resourceful teaching material that can be used at all levels of the primary schools.
- An interesting workbook containing topics which can be integrated with other subject areas.
- The workbook needs to be properly sequenced e.g. activity 1.4- “What is a coral?” should be the first activity in the booklet.
- The resource material/ worksheets need to be more adequate. For example, there should be more details on the life cycle of polyps as it is not explanatory.

**3.2 Student’s survey**

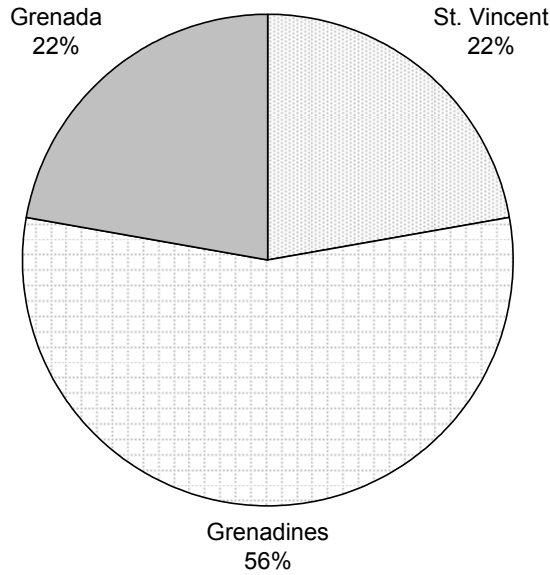
**3.2.1 Study population**

Of the sample population, 51% were female while 49% were male. The age range of the students were 57% (8-9 years old), 23% (10 years old) while 20% (11 years old) (Figure 3.4). The grades of the students partaking in the survey were from grade 3 to grade 6. The majority (36%) came from grade 4, 22% from grade 3, 21% each from grade 5 and 6. The majority of the students came from St. Patrick’s Anglican (11%), St. Patrick’s Catholic (Grenada) (11%), Calliaqua Anglican School (11%) and Sion Hill Government School (St. Vincent) (11%). However the majority of the students (56%) originate throughout the Grenadines islands and 44% resides in the main lands (Figure 3.5).



**Figure 3.4: Age distribution of students interviewed**

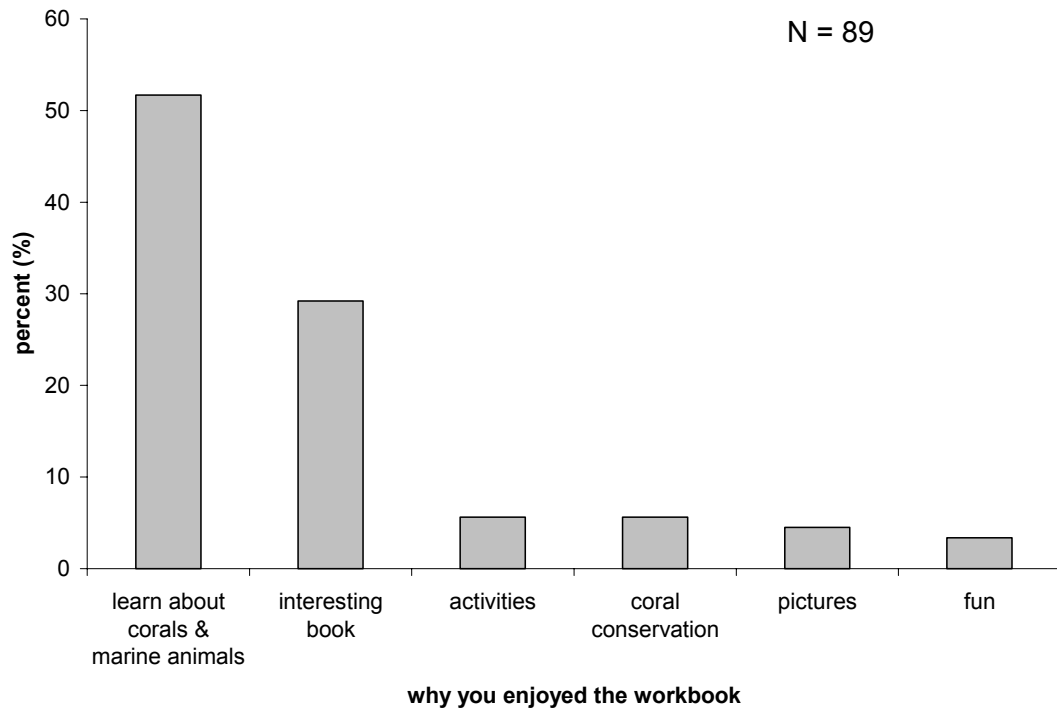
N =18



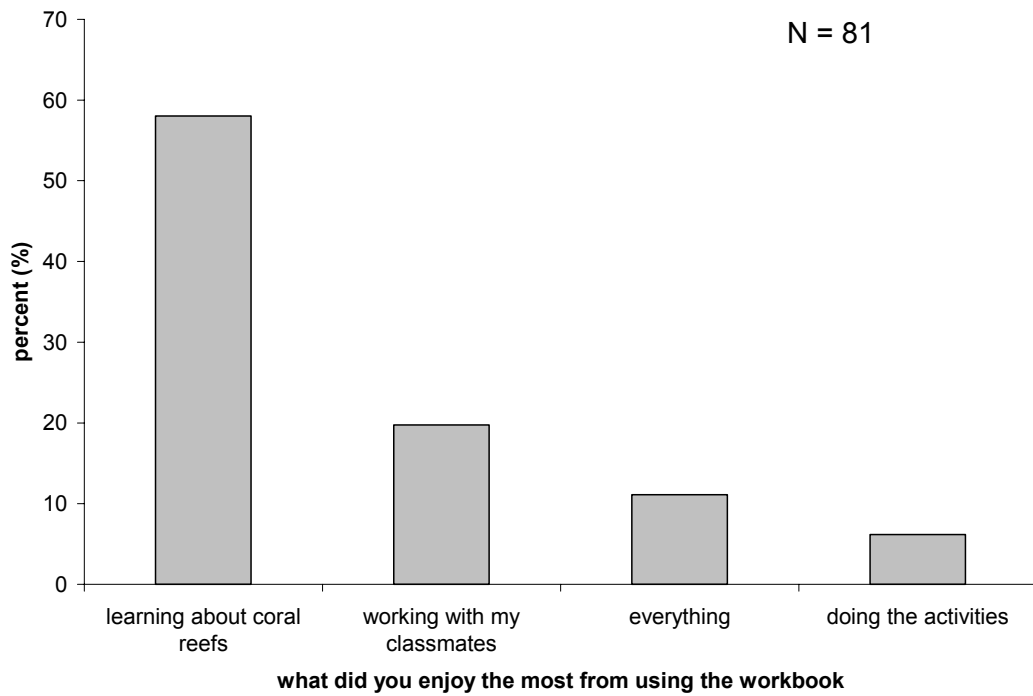
**Figure 3.5: Distribution of students from the participating islands**

### 3.2.2 Perception of the workbook as a whole

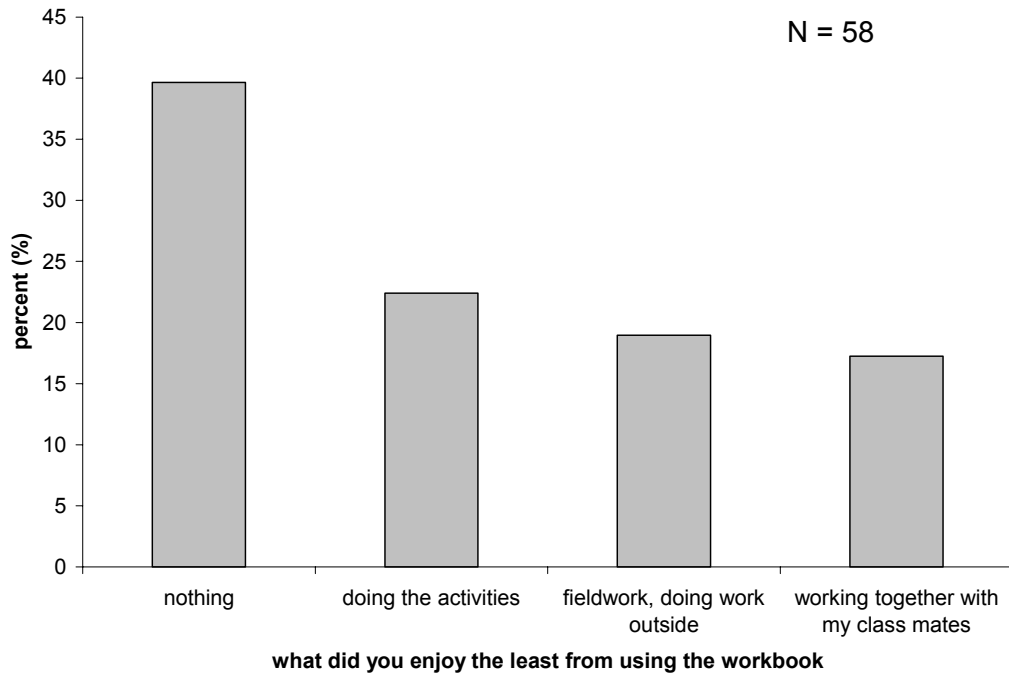
The majority of the students (52%) enjoyed the workbook because they learnt about corals and marine animals while others thought it was an interesting book (Figure 3.6). For the short period during which the students used the workbook, 84% learnt about coral reefs and the environment, 86% learnt about the importance of reefs while 67% learnt about the activities that could damage or threaten reefs. Most of the students mostly enjoyed learning about coral reefs (58%) (Figure 3.7). Nineteen liked working with their classmates. Forty percent of the students stated that there was nothing that the least enjoyed while 22% did not enjoy doing the activities (Figure 3.8). About 87% of the students indicated that other primary school students would like to use this workbook during schools while 11 percent were uncertain.



**Figure 3.6: Reasons why the students enjoyed the workbook**



**Figure 3.7: What the students enjoyed the most from using the book**



**Figure 3.8: What the students enjoy the least from using the workbook**

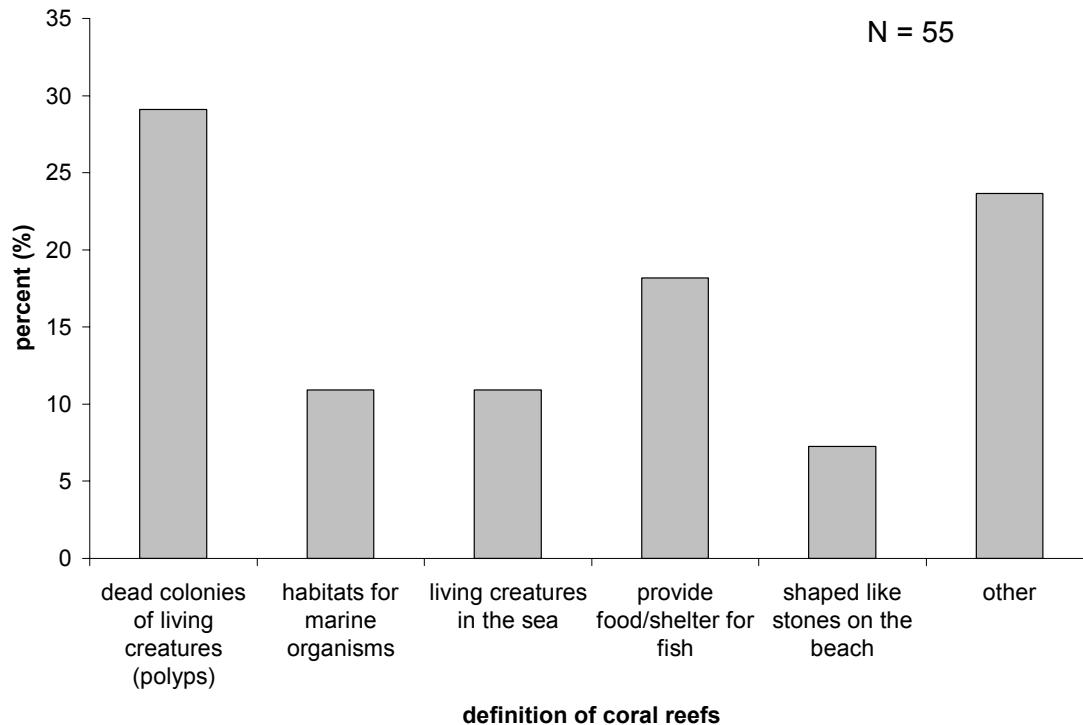
### 3.2.3 Impact of workbook on students

Seventy-seven percent of the students indicated that they knew the definition of coral reefs (Table 3.4). Twenty-nine percent stated that coral reefs were dead colonies of living creatures known as polyps (Figure 3.9). Eighteen percent indicated that it was a place that provided a home and food for fish. Eleven percent stated that they were living creatures in the sea and another 11% said that there were habitats for marine organism. Seven percent said they were shaped like stones on the beach. The remaining 23% replied with the following answers (listed the types of corals, they protected people from drowning, fossils and animals under the sea, protect men and something that protects from damage, reefs made from coral).

**Table 3.4: Responses relating to students' knowledge about coral reefs**

|  | Yes      | Don't know |
|--|----------|------------|
| <i>Do you know what coral reefs are?</i>               | 77% (64) | 23% (31)   |
| <i>Did you know about reefs before using this book</i> | 40% (36) | 60% (54)   |
| <i>Corals are important to our living</i>              | 87% (78) | 13% (12)   |
| <i>Corals are important to our environment</i>         | 73% (64) | 27% (24)   |





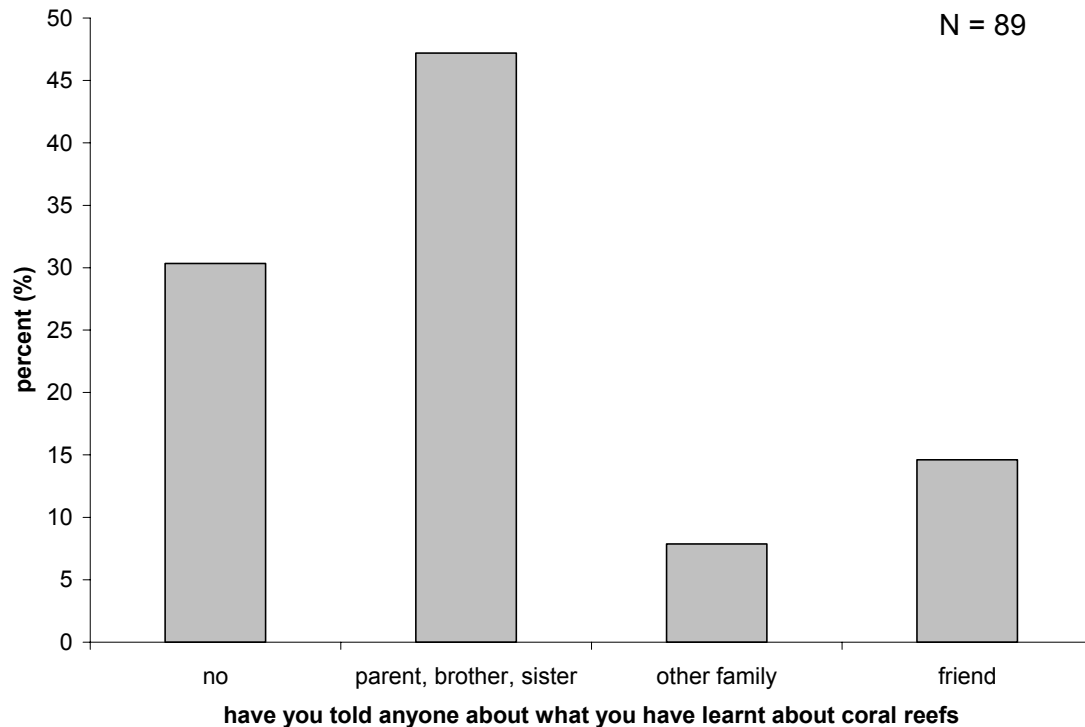
**Figure 3.9: Student's response to the definition of coral reefs**

Only forty percent knew about coral reefs before they used the workbook at school (Table 3.4). Now the book has been introduced, eighty-seven percent indicated that they knew why reefs were important to our living while 73% stated that they knew the importance of reefs to the environment (Table 3.4). When asked about the importance of reefs to the environment, 19% indicated that it was important for providing sand, 22% stated that it protected the beaches from beach erosion, 46% stated that coral reefs provided food and shelter for sea creatures and 23% agreed that is provided food for us, primarily fish (Table 3.5).

**Table 3.5: Responses related to students' knowledge of the importance of coral reefs**

|   | Yes      | Don't know |
|---|----------|------------|
| <i>They help to provide sand</i>                            | 19% (13) | 81% (55)   |
| <i>Prevent beach erosion</i>                                | 22% (15) | 78% (52)   |
| <i>Provide food and shelter for fish</i>                    | 46% (31) | 54% (36)   |
| <i>Provides fishery products used for human consumption</i> | 23% (14) | 77% (46)   |

Nearly half of the students (Figure 3.10) stated that they told immediate family members about what they learnt about coral reefs, while 30% said they told no one. Ninety-eight percent would like to use the workbook during the school term. Ninety-three percent understood all the activities that they completed with their teacher.



**Figure 3.10: Percentage of students having told others about what they learnt coral reefs**

## **4 DISCUSSION AND CONCLUSION**

### **4.1 Summary**

#### **4.1.1 Perception of the workbook**

The use of the People and Corals workbook in primary schools has the ability to educate the children in the Caribbean about corals reefs and also promote and improve coral reefs conservation and protection. The workbook is a good resource for teachers especially since most of them were not science teachers. The workbook is teacher-friendly resource as it was easy to use, provides good teaching ideas using methods with which the majority of teachers were familiar and there was a glossary to help them with unfamiliar terms. This makes the book an easy candidate to be integrated into the school’s curriculum. Teachers will not have to spend additional time understanding the activities and researching coral reef-associated terms especially since most will have limited knowledge on the subject area. Some teachers said that the workbook could be integrated in several subject areas. This was proven true when teachers indicated that they used the workbook in social studies, language arts and at environmental clubs i.e. 4H Club. This was possible as the pack covers a variety of subjects and skills that should help integrate the various activities into the normal school work.

Students enjoyed learning about coral reefs and the knowledge has gained their attention. The majority of the students enjoyed the book and stated that they thought other students from primary schools across Grenada and St. Vincent would like to use the book during school. This response along with the teachers’ comments on the workbook could support the introduction of the workbook into other primary schools across St. Vincent and Grenada.

Apart from that, even though the workbook was targeting 8-11 year old children, one teacher indicated that it could be used throughout the entire school. Another teacher indicated that during the project all the teachers were using the book from grade 1 and upwards at their school.

#### 4.1.2 Impact of workbook on the students

This evaluation has shown that in the short time frame that the students used the workbook; it has effectively sensitised the students and substantially increased their awareness of coral reefs. More than half of the students were oblivious to coral reefs before using the workbook and are now conscious about reefs, their importance to our livelihoods and the environment. It may have been too early to assess whether students changed their attitudes and behaviour towards the environment and coral reefs. However, now the children are cognizant about coral reefs, they appear to be committed to learning more about reefs and to changing their attitudes and behaviours that may be damaging to reefs and the environment. It is hoped that they will eventually become stewards of the environment and build a sense of ownership of the resource. Figure 4.1 illustrates some of the students at Calliaqua Anglican Primary, St. Vincent, participating in a beach clean-up during their use of the workbook.

Some of the students have shared the knowledge they learnt about reefs with family and friends. This is a good way to filter the knowledge of the importance of coral reefs to the wider society, especially since their parents, family members or friends may be the resources users (e.g. fishermen, divers, water taxi operators) who depend on coral reefs for their livelihoods. As the society learns more about the importance of reefs to their livelihoods, it is expected that they will change their attitudes and behaviours towards the environment and develop a sense of ownership. They might refrain from activities that are detrimental to coral reefs and environment and also protest against certain developments which may threaten the coral reef ecosystems. The impact expected from this project and the use of the workbook is



**Figure 4.1: Students participating in a beach clean-up**

similar to the proposed Green Schools Programme in the Grenadines which hopes that children will learn sustainability by living it everyday at school. Thus after school sustainability becomes how they think and approach life. As they get older, their exposure influences the notion of sustainability to become part of their culture (CERMES 2005). After the project's participating students leave school, we hope that they will approach life with an environmentally conscious frame of mind to protect the coral reefs and its environs.

#### 4.1.3 Suggestions for improvement

The teachers have listed a few of issues from using the People and Corals book. One significant issue was the sequencing of the workbook. The first chapter does not commence with a definition of coral reefs but instead introduces the value of coral reefs to the environment. Students should be provided with a comprehensive definition of coral reefs from the first

moment that they use the book. When teachers were asked about comments regarding the workbook only a few responded and thus the comments cannot be used presently to make any significant changes in the workbook but can be used as ideas for future improvement. These comments could be examined along with teachers from other Caribbean countries who have used the book, before the workbook can be improved.

#### 4.1.4 Limitations

There were a few drawbacks in the project. The training workshop lacked visual aids e.g. posters at the venue and during the presentations to make teachers more consciously aware of coral reefs to the Grenadines. Furthermore, the information was too condensed for the participants to grasp in the allotted period of time. Perhaps the time period for the workshop should have extended not only to explain adequately the concepts, but also to inform the teachers more about coral reefs. Also the workshop did not allow the teachers to provide input on the workbook and did not give them an opportunity to provide more input on what they would like to do or see pertaining to the implementation of the workbook in schools.

Prior to the use of the workbook, a pre-evaluation of the student's knowledge should have been conducted to determine their level of environmental knowledge and awareness. This data could be compared to the post evaluation survey to determine any change in the level of knowledge. In the survey, the subject areas (e.g. language arts, comprehension, social studies, general science) that the teachers used the workbook should have been identified. From word of mouth, some of the teachers used the book in social studies, language arts and at the 4H Club. This shows how the workbook could be easily integrated into any subject area. Secondly, the survey could not cover the entire workbook since the teachers only had a limited time frame to use the book and make their assessments. Additionally it was difficult to get a representative group of teachers to provide an overall assessment of a selected number of coral reef activities. The suggestions provided were not sufficient to make any significant improvement to the workbook. Finally a pilot survey should have been conducted to determine the most appropriate mode to conduct the survey i.e. whether allowing the students to fill in the survey or interviewing them face to face would be more effective. Even though the latter would take a longer time to complete the surveys, one must take into consideration that while some of the students will be knowledgeable about coral reefs. Some of those same students may not be as literate as others.

#### 4.1.5 Future work

The knowledge learnt from this project could be used in implementing the workbook in all the primary schools in the mainland islands of Grenada and St. Vincent. The only ministerial representative was the permanent secretary from the Ministry of Carriacou and Petit Martinique Affairs. Thus future workshops should include the attendance of the other Ministry officials in the education sector. Their attendance would not only gain support in officially adopting the workbook in schools but also in promoting environmental education throughout both primary and secondary schools.

The project requires a long term approach to evaluation. The survey conducted only examined the immediate impact of the workbook on the students. Although it may have changed their values, it may take longer for a change in their behaviour to manifest itself. Another post evaluation of students who used the workbook after a two-four year period could obtain information on how the students have changed in attitudes and behaviours and what actions they have implemented or participated in, to protect the coral reefs and environment. Additionally it could determine if the knowledge that the children shared with their family and

friends have influenced their family/friends behaviours, actions and attitudes towards the coral reefs. Post-monitoring and evaluation could be conducted by the Sustainable Grenadines Project; however it would require additional funding for travel and expenses to conduct the evaluation.

#### 4.1.6 Lessons learnt from the project

Several lessons were learnt from conducting this project regarding primarily the workshop and the evaluation process.

- Maintain constant communication with principals and teachers by telephone or via a liaison on the island when planning the workshop. Use of e-mail is usually not the best method due to the lack of response when planning the workshop dates and other activities.
- The schools in the Grenadines have limited numbers of teachers so it is difficult to recruit teachers to attend a training workshop.
- The workshop's atmosphere is key to enhance learning in a short period of time. Teachers would have learnt more about coral reefs if visual aids were used.
- Ensure the information provided at the workshop is not too condensed for the allotted period. Time should be provided for the participants to learn and to provide feedback.
- A longer period should be allotted for the use of the workbook prior to evaluation so teachers could cover other chapters and provide better feedback on the entire workbook.
- Surveys for primary students should take into consideration the literacy level. While some students may be knowledgeable about coral reefs, they may lack literacy skills to answer the questions confidently.
- Collaborate with an educational officer on the survey to help foster ideas in terms of the possibility of officially adopting the book into the Vincentian and Grenadian school's curriculum. Their participation will help in the facilitation in the use of the workbook.
- Use other means than a survey to obtain information e.g. an assessment workshop/ a working session could discuss the evaluation results and future steps that should be taken regarding the workbook and environmental education.

## 4.2 Conclusion

The People and Corals project has initiated one of the many steps to coral reef conservation in the Grenadines by focusing on students in primary schools. Environmental education is the key to increasing the public's awareness about coral reef conservation and by spreading the knowledge through children; this can have a contagious effect on all levels of society. Now that the children have been educated about reefs it is hoped that they will build a sense of ownership and stewardship that could be passed on to future generations.

Recommendations were made based on this project for establishing a coral reef education program in primary schools.

- Provide all the resource materials needed for the program and ensure it is teacher-friendly (i.e. provision of a glossary, good interactive and familiar teaching methods) to facilitate the successful delivery of coral reef educational material.
- Provide in-depth training for the teachers about the resource material, corals reefs and environmental education.

- Develop a program that can be integrated into the schools' curriculum while also meeting the teacher's traditional course objectives.
- Ensure all stakeholders are involved in designing the program to take into account their views i.e. teachers, ministry, environmental NGOs and school community.
- Arrange with teachers about how often the educational can be incorporated during the course schedule and school activities.
- Ensure the program will result in positive changes in values, attitudes and behaviour.
- Program should provide outreach activities so students can share and communicate knowledge of coral reefs with the wider community.

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## 6 APPENDICES

### 6.1 Appendix 1: Interview Schedule

#### Evaluation of the use of the People & Corals Workbook Interview schedule

January 29<sup>th</sup> –February 7<sup>th</sup> 2007

| Date                     | Schools   |
|--------------------------|---|
| Mon 29 <sup>th</sup> Jan | St. Patrick's Anglican School<br>St. Patrick's Catholic School                                      |
| Tue 30 <sup>th</sup> Jan | Dover Government School<br>Mount Pleasant Government School<br>Harvey Vale Government School        |
| Wed 31 <sup>st</sup> Jan | Hillsborough Government School<br>L'Esterre Rosary School<br>Petit Martinique Roman Catholic School |
| Thu 1 <sup>st</sup> Feb  | Mary Hutchinson Primary School<br>Paget Farm Government School                                      |
| Fri 2 <sup>nd</sup> Feb  | Canouan Government School   |
| Mon 5 <sup>th</sup> Feb  | Mayreau Government School   |
| Tue 6 <sup>th</sup> Feb  | Sion Hill Primary School<br>Calliaqua Primary School  |
| Wed 7 <sup>th</sup> Feb  | Mustique Primary School   |



## 6.2 Appendix 2: Teacher's Survey

### Evaluation of the use of the "People and Corals" workbook, January 2007

#### Teacher's Survey

Date: \_\_\_\_\_

ID No.: \_\_\_\_\_

This survey is designed to evaluate the use of the People & Corals: An Educational Pack for Primary Schools in the selected primary schools from St. Vincent, Grenada and the Grenadines. Your responses will be used to improve the use of the workbook and promote further introduction of the workbook into schools in St. Vincent and Grenada. All results from the survey will be shared at the end of the evaluation. Please remember that all responses will be kept anonymous.

#### A. Demographics

1. Gender:  Male  Female
2. Island/Country:  Bequia  Canouan  Carriacou  Grenada  
 Mayreau  Mustique  Petit Martinique  St. Vincent  
 Union Island
3. Name of School: \_\_\_\_\_
4. Position held at school:  Teacher  Science teacher  Senior teacher  
 Head Teacher/Principal  Other: \_\_\_\_\_

#### B. About the People & Corals education pack as a whole:

For the following statements, make an assessment using the scale of 1 to 5:

1 = Strongly disagree, 2 = Disagree, 3 = Not sure, 4 = Agree, 5 = Strongly agree

The People & Corals educational pack:

5. Helps teachers educate the children in the Caribbean about coral reefs. \_\_\_\_
6. Will assist in promoting and improving coral reef conservation and protection in the Caribbean. \_\_\_\_
7. Encourages responsible attitudes and actions in relation to coral reefs. \_\_\_\_
8. Was easy to use. \_\_\_\_
9. Contains good teaching ideas. \_\_\_\_
10. Uses teaching methods with which teachers are familiar. \_\_\_\_
11. Was useful for teachers in several subject areas. \_\_\_\_
12. Included a glossary helped with understanding unfamiliar terms. \_\_\_\_
13. How often did you use the workbook (Please tick one)?  
 Daily  weekly  biweekly (every two weeks)  monthly  
 semimonthly (twice a month)
14. How often would you recommend for the use of this workbook in schools (Please tick one)?  
 Daily  weekly  biweekly (every two weeks)  monthly  
 semimonthly (twice a month)

#### C. Impact of the workbook on the students (Please tick response):

15. Do you think this workbook has increased the students' awareness about coral reefs?

Yes No

16. Do you think the students understood why we need to protect coral reefs?

Yes No

17. Do you think the students understood the importance of corals to our livelihoods?

Yes No

18. Could this workbook assist in changing their attitudes and behaviors towards the coral reefs?

Yes No

19. Have the students made any noticeable changes to their thinking or behaviour towards coral reefs and its environment? If yes, elaborate?

Yes No

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20. Do you think the students will share what they have learnt about coral reefs with their family and friends?

Yes No

**D. About activities chosen in the People & Coral pack:**

21. Which activities did you cover in Chapter 1: "Coral Reef Environment"? (Please tick all that apply)

Why are corals important? The value of coral reefs

How much area do coral cover? The area of ocean covered by coral reefs

Who shares our home? The importance of coral for reef fish and other animals

What is coral? Corals as living organisms (polyps)

What is a polyp? The structure of coral polyps

What do polyps do? The behaviour of polyps

What do polyps need to live? Ideal growing conditions for corals

How do coral colonies grow? Polyps' growth: coral forms (asexual reproduction)

How does a coral get about? The colonization of new areas (sexual reproduction)

22. Which of the activities would you avoid? If there are none, proceed to #25.

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23. Why would you avoid those activities?

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24. How would you improve those activities?

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Choose one of the activities which you completed (listed in # 19 above) and answer the following questions.

Name of chosen activity: \_\_\_\_\_

25. Were the instructions for the activity clear? (Please tick) Yes No

26. Is the supporting information for the activity (i.e. resource sheets: see sample) adequate, poor or good?

\_\_\_\_\_

27. What educational objectives were you able to cover in the activity? (Please tick all that apply)

- Knowledge and understanding
- Skill development
- Development of values, attitudes and behaviour
- All of the above
- None of the above

28. Could this activity be improved? If yes, in what ways (Please tick)?

- Yes  No

\_\_\_\_\_  
\_\_\_\_\_

29. Do you think the students enjoyed the activity (Please tick)?

- Yes  No

30. Did the students make any comments about the activity? If yes, what did they say?

\_\_\_\_\_  
\_\_\_\_\_

31. Would you like to make any comment about any specific activity (Please tick)?

- Yes  No

If yes, please state below:

\_\_\_\_\_  
\_\_\_\_\_

32. Would you like to make any comment about the pack as a whole (Please tick)?

- Yes  No

If yes, please state below:

\_\_\_\_\_  
\_\_\_\_\_

### 6.3 Appendix 3: Student's Survey

#### Evaluation of the use of the "People and Corals" workbook January 2007

*Student's survey*

Date: \_\_\_\_\_

ID No.: \_\_\_\_\_

This survey is designed to examine the use of the People & Corals: An Educational Pack for Primary Schools in the selected primary schools from St. Vincent, Grenada and the Grenadines. Your answers will help us to improve the use of the workbook and promote its use in schools in St. Vincent and Grenada. All results from the survey will be shared at the end of the evaluation. Please remember that all responses will be kept anonymous.

#### A. Demographics:

1. Gender:    Male            Female
2. Age (Please tick one box):    9 years old            10 years old            11 years old
3. Class/Grade: \_\_\_\_\_
4. Island/Country: Bequia            Canouan            Carriacou            Grenada  
                         Mayreau            Mustique            Petit Martinique            St. Vincent  
                         Union Island
5. Name of school: \_\_\_\_\_

#### B. About People & Coral workbook as a whole:

6. Did you enjoy using the workbook? (Please tick one box)  
Yes    No
7. If yes, why or if no, why not?  
\_\_\_\_\_  
\_\_\_\_\_
8. What have you learnt while using the People & Corals workbook? (Tick all that apply)  
 About coral reefs and its environment  
 The importance and value of coral reefs  
 Activities which damage or threaten the coral reefs (e.g. pollution etc)
9. What did you enjoy the most from using the workbook? (Tick only one)  
 Field work/doing work outside (e.g. at the beach, on school grounds etc)  
 Working together with my classmates  
 Learning about the coral reefs  
 Doing the workbook's activities

- I don't know
- Nothing
- Everything

10. What did you like the least about using the book? (Tick only one)

- Field work/doing work outside (e.g. at the beach, on school grounds)
- Working together with my classmates
- Learning about the coral reefs
- Doing the workbook's activities
- I don't know
- Nothing
- Everything

11. Do you think primary school students in St. Vincent and Grenada would like to use this book during school? (Please tick one)

- Yes
- No
- I don't know

**C. Impact of workbook on students:**

12. Do you know what coral reefs are? (Please tick one)

- Yes
- No
- I don't know

If your answer is "yes", what are coral reefs? \_\_\_\_\_  
\_\_\_\_\_

13. Did you know anything about coral reefs before using the book/worksheets? (Please tick one)

- Yes
- No

14. Do you understand why coral reefs are important to our living? (Please tick one)

- Yes
- No

15. Do you know the importance of the coral reefs to the environment? (Please tick one)

- Yes
- No

If yes, can you list some reasons why coral reefs are important?

\_\_\_\_\_  
\_\_\_\_\_

16. Will you pass on the information which you have learnt about coral reefs with your family and friends?

- Yes
- No
- I don't know

17. Would you like to use this workbook during the school term?

Yes    No    I don't know

**D. About the activities**

18. Did you understand the activities that you did with your teacher?

Yes    No

19. Which activity/activities did you enjoy?

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20. Which activity/activities did you not enjoy?

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