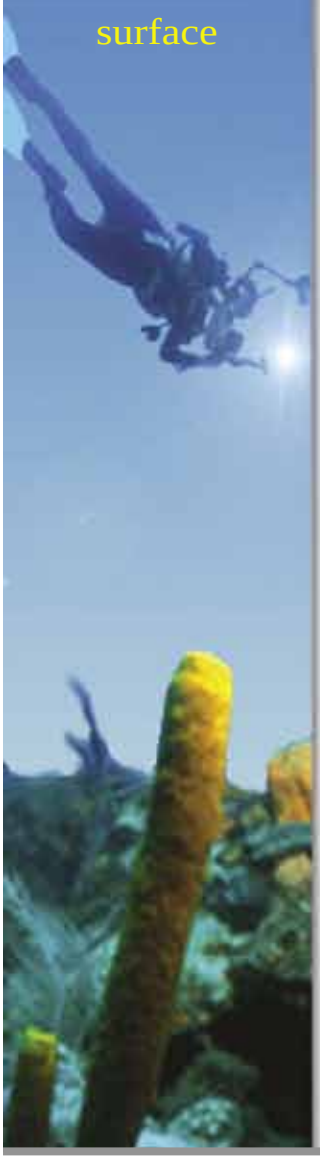
Out of the Blue

Bringing the deep issues of marine conservation in Tobago to the surface



A quarterly publication of the Buccoo Reef Trust

Issue 1: First Quarter 2003

Welcome *to this first issue of 'Out of the Blue', a quarterly newsletter of the Buccoo Reef Trust. We hope this newsletter will bring the deep issues of marine conservation to the surface by shedding light on some of the threats and opportunities facing our marine environment. Our aim is to inform and stimulate your interest in marine conservation by providing a forum for debate and discussion in the electronic and print media. If you wish to be a regular recipient of 'Out of the Blue' please fill the form at the back (page 8) and send it to us. We would like to publish YOUR views and opinions so please liase with us (see page 7 for contact information). We would be glad to hear form you.*

Inside this issue

Wastewater treatment for Tobago!

On February 13th and 14th an Environmental and Wastewater Workshop took place at the Tobago Hilton, hosted by the Inter-American Development Bank (IADB) and coordinated by WASA and Buccoo Reef Trust (BRT).

The aim of this workshop was to review the options for wastewater treatment in South-West Tobago as presented by consultants from Thames Water International. Present at the meeting were the Honourable Orville London (Chief Secretary, THA), Honourable Rennie Dumas (Minister of Public Utilities and Environment), the Honourable Dr. Keith Rowley (Minister of Planning and Development), and Mr. Errol Grimes (CEO, WASA). The relevant THA departments, TIDCO, IMA, Environment Tobago, the All Tobago Fisherfolk Association and the BRT were also represented.

Several options for disposal of wastewater were presented by the Thames Water consultants, with the preferred option being to develop a sewage treatment plant in the Crown Point area with a discharge pipe located offshore. The exact location and length of the discharge pipe are yet to be determined since additional oceanographic studies are required in order to inform the precise placement of this outfall pipe.

Accompanying this presentation were presentations from the environmental NGO community (Buccoo Reef Trust and Environment Tobago) and WASA. The environmental NGOs reviewed the impact that poorly treated sewage is having on coastal ecosystems around Tobago and highlighted some environmental and social considerations that needed to

Cont. on page 6

BUCCOO REEF TRUST

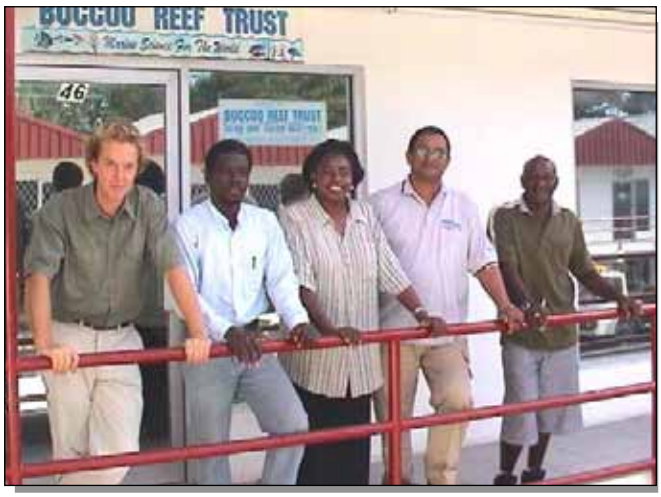
research education conservation

Vision

A world in which the marine environment of tropical islands is conserved for the benefit of future generations while maximizing present opportunities for sustainable livelihood that enhance the quality of human life.

What is the Buccoo Reef Trust

The Buccoo Reef Trust (BRT) is a non-profit company registered in Trinidad and Tobago. It was specifically created to assist government and communities in addressing the threats facing Tobago's marine environment and to explore opportunities for the sustainable development of marine tourism, fishing and aquaculture in the Southern Caribbean region.



Team BRT. Directors and staff based in Tobago. From left to right: Owen Day (Director), Barry Lovelace (Research), Kaye Trotman (Director), Gerald Mac Farlane (Director) and Roland Guilland (Research)

Our core strategy is to build and operate the Tobago Marine Research Centre (TMRC) as an internationally recognised institution of marine research and education. This centre will also serve as an information and learning centre for schools and the community. To ensure financial independence, the TMRC will also have its own income-generating activities and services, such as university-accredited courses, a visitor centre and accommodation for students and visiting scientists. The business plan for the TMRC was developed with assistance from the Inter-American Development Bank. During 2002, BRT directors were busy fund-raising for the TMRC and its specific education and research programmes. Support has been obtained and pledged from a number of donors, including C.L. Financial, Angostura Holdings, the J.B. Fernandez Memorial Trust and the National Fish and Wildlife Foundation of USA. We are also grateful to many local businesses that have supported our education and research activities in Tobago. The Tobago House of Assembly and Central Government have both expressed their full support for the project, and will assist with providing a suitable site on which to establish this important non-profit centre for environmental education and research.

Outlined in the following pages are some of the education and research programmes that we have been developing over the past 12 months.

BRT's Newest Team Member

Please join us in welcoming Hyacinth Armstrong to our team. Hyacinth joins the BRT team as the environmental education coordinator. She will be responsible for implementing the primary school environmental education programme, which is geared towards developing positive environmental stewardship ethics among the nation's youth.

Hyacinth Armstrong,
Environmental Education Coordinator, BRT

She holds a B.A. in Biology from Mount Holyoke College in Massachusetts and recently graduated from American University in Washington, D.C. with a M.A. in Environmental Policy. We are very happy to have her on board. Welcome Hyacinth!

Education is the Key !

Last year's World Summit on Sustainable Development in Johannesburg served to highlight the failure of most governments in protecting the environment and reinforced the need for civil society to play a more active role in this area. Meaningful public participation in environmental protection requires an awareness of the problems and solutions as well as a desire to be involved. This knowledge and appreciation for the natural world can only be obtained through a process of public education, which the Buccoo Reef Trust, together with other NGO's and community groups in Tobago, is committed to providing through schools and community groups.

Primary School Programme coming soon!

This year, thanks to funds obtained from the National Fish and Wildlife Foundation USA, the J.B. Fernandes Memorial Trust I, and C.L. Financial, the Buccoo Reef Trust will be starting a Primary School Environmental Education Programme this April. This programme has been designed to reach every primary school in Tobago and will include the delivery of a cross-curricula educational pack, entitled Coral and People developed by the Caribbean Conservation Association (CCA).

One principal aim of this programme is to empower Teachers. It recognizes that teachers have to operate within tight time constraints and that environmental education is not a formal part of most curricula and primary school syllabuses. Therefore, the pack will cover a variety of subjects and skills that should help to integrate the activities into the normal school work.

In addition, the programme hopes to provide opportunities for young children to have guided trips to the rain-forest, beaches, wetlands and Buccoo Reef, so that they can discover, learn, explore and develop their own appreciation of the environment. Teachers! Plan to be a part of this exciting project.

Community Awareness Programme

The Buccoo Reef Trust in collaboration with the THA produced a 30-minute television documentary: Buccoo Reef – to Rescue and Restore that has been broadcast on national television in Trinidad and Tobago on several occasions. This documentary raised awareness of the threats posed to the island's best-known and largest coral reef and played an important role in the government's recent decision to build the long-overdue sewage collection and treatment system for South-West Tobago (see article on page 1).

Video CDs are available for purchase at the BRT office.

CD Video clip of the documentary "Buccoo Reef - to Rescue and Restore." Highlighted here is the reef walking problem.

Development of Tertiary Education Programme

The BRT, in collaboration with UWI and an international network of universities, is developing a tertiary level education programme in the marine sciences. A Memorandum of Understanding was signed between the BRT and UWI on the 5th September 2002, which marked the start of official collaborations on developing tertiary level courses, student exchanges and joint research projects.

Sea, Sun & Science

In July 2002, the BRT ran a 3-week School Vacation Programme entitled "Sea, Sun and Science –A Marine Science Experience". Twenty-two secondary school students of Tobago participated in this fun-filled learning experience. The programme included lectures in the [illegible]gy, seamoss cultivation, oceanography, fisheries management, solid waste pollution, Geographic Information System (GIS) and remote sensing. (satellite pictures) In addition, the students were introduced to snorkeling and scuba diving by World of WaterSports, and to sailing by Natural Mystic Charters. They were also taken out on 2 glass bottom tours of Buccoo Reef and at Speyside. The programme received wide acclaim from students, teachers and parents. Certificates of Participation were presented to the students by the Chief Secretary, Tobago House of Assembly, and the Minister of Tobago Affairs at a ceremony held on Wednesday 31st July 2002 at the Conrado Beach Resort. The event included speeches from invited guests and participants, one of whom stated that it was the best 3 weeks of his/her life. Television coverage was provided by TV5 and most national and local papers covered the ceremony. Requests have been made for the continuation of this programme, which is expected to be repeated next year. Read first hand what one student had to say.

Chief Secretary of the Tobago House of Assembly Awarding certificate to student

A Student's Testimonial

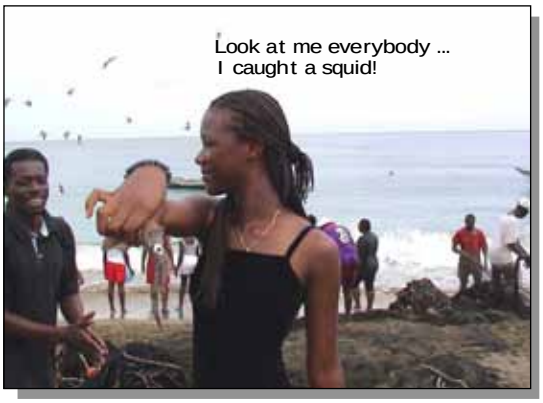
By **Cherece Wallace**, Marine Biology Student,
St. Georges University

This year, I returned home from University anticipating that summer 2002 would be boring. My guess, I would work at Fisheries and go through the same boring routine I've done for the past two years. But unfortunately, I'm glad to say that for the first time I was wrong. I didn't know what was in store for me this year.

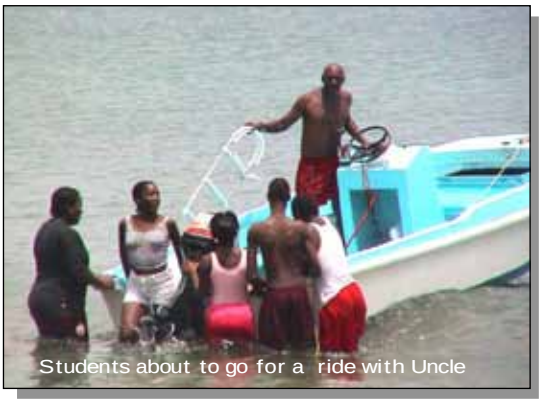
Well, the Sea, Sun and Science: A Marine Science Experience.hosted by the Buccoo Reef Trust and the Department of Marine Resources and Fisheries saved my life. Participating in the 2002 Vacation Marine Science Programme opened my eyes to experience and enjoy my very own marine environment. I am very sure I wouldn't have had such an opportunity anywhere else.

This three-week experience gave me the opportunity to appreciate Tobago. Even though I study Marine Biology, all the work I've done was for credits - rarely enjoyable. This marine experience gave me the opportunity to learn, as well as to enjoy what I'm doing while learning. In this fun-filled, activity-packed programme, the topics that truly impressed me were the Introduction to Oceanography, the Experience of Seine Fishing and the Seamoss Cultivation activities.

Students pulling seine at Turte Beach



Fish roasting on an open fire



Students about to go for a ride with Uncle

The Introduction to Oceanography was done by Dr. Owen Day, where the class took a trip to the Speyside reefs then to Little Tobago. These reefs were the most beautiful I've ever seen (Buccoo Reef is somewhat degraded by comparison). The giant brain coral, the multitudes of colourful fishes, even seeing a nurse shark which was a first time experience for me. On little Tobago, we discussed ocean currents and the helpful significance of upwelling on our coasts.

Seine fishing was another first for me, and a once in a lifetime opportunity for a country girl who doesn't live anywhere near the sea. With bruised hands, we helped the fishermen pull their seine at Turtle Beach. We learned that the seine comprised of three different nets each varying in the size of the mesh. Furthermore, we caught several different species of fish and among our catch were some squid. We learned the parts of its anatomy and were shown how to prepare it for eating. To finish our well-spent day, a group of us roasted some of the fish on open fires while some of the guys and lecturers played rugby and soccer on the beach—we had a blast!

Our day at Canoe Bay, cultivating and preparing seamoss lines was an extremely worthwhile experience. Being instructed by Mr. Barry Lovelace, the class was shown how to twist seamoss into ropes and prepare the bottle buoys on lines. We then set these lines, anchors and seamoss ropes in the sea at suitable locations.

I really enjoyed this summer programme. I told one of my university supervisors that I didn't have any regrets going to this programme. I learned a lot and it took me away from the normal boring work routine this year.

Surely, I have no problems encouraging any young person, who shares similar interests as myself to attend one of these programmes and possibly think about taking up a career in marine sciences. Hats off, and much thanks to the Buccoo Reef Trust and other contributors to this programme for giving me the opportunity to love my island more.
Keep up the good work!

Seamoss Cultivation Demonstration Project

Seamoss is a collective term given to a family of marine algae, that are commonly harvested for food in the Caribbean. The jelling properties of seamoss stem from its agar content, which is easily released by immersion in boiling water and which thickens when cooled. Tests of several species of seamoss have shown that they contain vitamins and minerals, and are useful in the diet as roughage. Seamoss preparations are also reputed to be aphrodisiac. The popularity of this foodstuff has led to widespread over-harvesting, and the once abundant sea moss is now difficult to find in Tobago's coastal waters.

Recognizing the potential to make the harvesting of seamoss more economically and ecologically sustainable, the BRT obtained funding from the J.B. Fernandes Memorial Trust-I in 2002 for a project aimed at developing a seamoss cultivation industry in Tobago.


Seamoss cultivation Experiment at Bloody Bay

The approach taken in this project is to facilitate the production, value-added processing and marketing of seamoss products on a pilot-scale. The necessary training, equipment and support services are being provided to selected volunteers, who will be responsible for their individual crops and will benefit directly from the sale of their harvest. A marketing campaign and a package of incentives to local food processors is also being designed to stimulate the market for dry sea moss and value-added sea moss products.

The seamoss cultivation project is progressing well, though some technical and social hurdles remain.

The Fernandes Memorial Trust-I has agreed to extend the project to 2003 in order to address these challenges. Additionally, a proposal for a two-year project for seamoss cultivation, processing, product development and marketing was submitted to the Inter American Foundation (IAF) in 2003.


Seamoss researcher Barry Lovelace measures growth rates of two different species. Inset: Close up of the two major types of seamoss used in Tobago (Gracilaria domingensis and Gracilaria 'terete' respectively)

The IAF is interested in supporting activities aimed at poverty alleviation in rural communities.

Research Programmes

Whether it is the loss of corals on inshore reefs, coastal pollution, or the increasing scarcity of some species of fish or shellfish, most of us are aware that the marine environment surrounding Tobago is being degraded. It is an emotive issue but the solutions must be based on scientific study and solid facts. The aim of the Research Programme of the Buccoo Reef Trust is to provide answers to the most relevant environmental questions. This research is done in collaboration with the Department of Marine Resources and Fisheries of the THA who have responsibility for the management of the coastal zone, and with relevant scientific experts. Our findings are always made available to the public.

Water Quality and Reef Health

A scientific study undertaken in April 2002 revealed the extent to which sewage runoff from land was negatively impacting on Tobago's valuable marine resources. This study was undertaken by Dr. Brian Lapointe of Harbor Branch Oceanographic Institution (HBOI) in Florida in collaboration with Buccoo Reef Trust and the Department of Marine Resources and Fisheries of the Tobago House of Assembly (THA). In this study the tissues of algae (marine plants) growing on coral reefs around Tobago were examined to determine the sources of the nitrogen (N) that was assimilated into the plant's tissues. This was accomplished using a tracing technique involving the analysis of N14/N15 ratios. The results of this study, which were presented at the annual Gulf and Caribbean Fisheries Institute and at the American Chamber of Commerce Annual meeting in Trinidad in May 2002, provide clear evidence that it is the nitrogen containing compounds from sewage runoff are responsible for most of the damage to inshore reefs in Tobago. These compounds encourage the growth and proliferation of algae and other opportunistic species (e.g. palythoa anemone) that smother living coral polyps (see inset on the left).

One of the drains discharging into Buccoo Bay

Water samples and video survey being taken in the Buccoo area. Inset: Bolder coral being 'violently' smothered by algae

The information from this study was helpful in sensitizing policy makers to the need for waste water treatment in South-West Tobago. The Inter-American Development Bank (IADB) is presently considering a loan to the Government of Trinidad and Tobago for the construction of the sewage treatment infrastructure for South-West Tobago. The IADB has asked WASA and the BRT to assist in organising technical workshops and public consultations (see article on page 1).

Gov't committed to waste water project

From Pg. 1

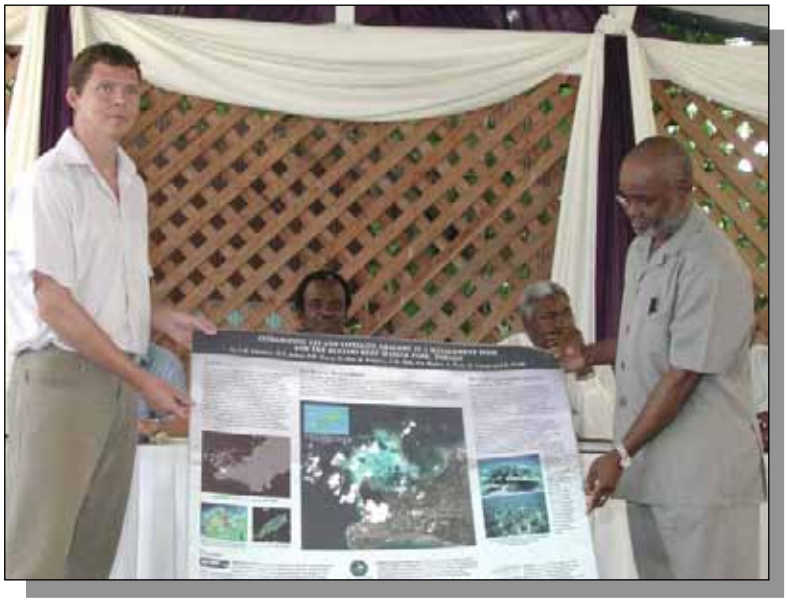
highlighted some environmental and social considerations that need to be addressed in developing such a project. The presentation by WASA explained the authority's planning framework for the development of water and sewage treatment Tobago.

The workshop was successful in obtaining a clear commitment from government to solve the wastewater problem in South-West Tobago. The Minister of Planning and Development told the audience that the government would make the money available for this large-scale development project as a matter of priority. It is envisaged that construction could start within a year and could last from 2 to 3 years.

This project has been on the drawing board for many years, but the increasing public health risk and the dramatic loss of coral on inshore reefs, i.e. Buccoo Reef, are finally being recognised as priorities. Let us hope that this project is implemented soon. The dramatic restoration of Hawaii's Kaneohe Bay coral reefs following the construction of a sewage treatment plant should give us all hope that nature can prevail.

GIS Habitat Mapping of Buccoo

A mapping project of Buccoo Reef was undertaken in July/August 2002 using high resolution satellite imagery (IKONOS) and a 6-week ecological survey. The project was a collaborative effort between the BRT and THA and was led by Dr Steve Freeman from ABPmer, UK. Another UK-based agency, Qinetiq, specialising in satellite imagery, provided assistance with satellite images and data processing. The results are being compiled into a Geographic Information System (GIS) database, which will enable researchers and stakeholders to better understand the changes affecting Buccoo Reef and how best to manage this important ecological and economic resource. A poster of the project was presented by Dr. Steven Freeman to the Honourable Stanford Calendar at a ceremony held last July (see inset).



Dr. Steve Freeman, GIS Expert, handing over a poster showing satellite image of the Buccoo Reef Area to Minister Stanford Calender at Conrado Beach resort

To continue this research, a proposal has been submitted to the UK Government's Darwin Initiative for a three year project. involving BRT, THA, IMA (Institute of Marine Affairs) and UWI to map the marine habitats around the entire coast of Tobago and establish a GIS/habitat mapping unit. This large project will help to identify the key areas of ecological importance and the "hotspots" of marine biodiversity. The project will also provide valuable baseline-data for monitoring studies and lay the ground-work for the creation of a collaborative GIS Unit in Tobago.

MSc students do their research in Tobago

The Buccoo Reef Trust supervised four MSc students from the University of Newcastle-upon-Tyne (UK) and one from the University of Wales, Bangor (UK) in successfully undertaking their field research projects in Tobago in 2002. One student, Ronan Roche, did an interesting study using brain corals as a proxy indicator of environmental change. His research was done with the assistance of the Department of Marine Resources and Fisheries, where brain corals from reefs around Tobago were cored and examined for fluorescents and density banding patterns.

Other theses that were submitted include, "The potential of tourism for funding marine protected areas in tropical countries: A case study of the Buccoo Reef Marine Park and the proposed Speyside Reefs marine Park in Tobago" by Lucy Freymuth and "An economic study of the SCUBA diving and fishery industries of Tobago: With a view to recommending the conservation of large fish types." by Joel Kimber. Their theses are available in the BRT library.

A: Researchers drilling core sample from brain coral.
B: Extracted core sample.
C: This hole remaining is plugged with a special cement after the core is taken - allowing for re-growth of coral surface.

BUCCOO REEF TRUST
research education conservation

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AIRLINE
ALL INCLUSIVE RESORT
BEACH
CORAL REEF
CRUISE SHIP
CUSTOMS OFFICE
DUTY FREE SHOP
FERRY
FISHING BOAT CHARTER
GLASS BOTTOM BOAT
GUEST HOUSE
MARINA
NATIONAL PARK
NATURE TRAIL
RESTAURANT
SAILBOAT CHARTER
SUBA DIVING
SELF CATERING HOTEL
SNORKELING
TAXI STAND
WATER SPORTS
YACHT

The crossword puzzle above highlights the types of tourist activities which take place in Tobago and the services which are needed to support them. Using the list on the right, circle the terms in the cross word puzzle as you find them. Each term appears only once and terms run horizontally, vertically and diagonally.

Hey YOUth!

Did you know that the Tourism industry contributes about 53 % of the GDP (revenue) to Tobago's economy? Yeah, that's right... and much of those tourism dollars trickle down to other persons not directly involved in the tourism industry —probably you! What's more, the Tourism industry is very much dependent on the health of our marine resources- beautiful reefs, fish, clean l attractive beaches. So do you see the linkages? Here's what, why not write an essay 300—400 words on 'The importance of the marine environment to our livelihood in Tobago.' E-mail it to us before June 1st at office@buccooreeftrust.org or send a hard copy along with a copy on disk or cd. Make ure to give your name, age, school, and contact information. The winning essay, along with the names of all other participants will be published in our next quarterly issue .

FRIEND OF BUCCOO REEF TRUST MEMBERSHIP FORM: Become a friend of BRT by simply filling out this form and sending it to us.

First Name:

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Cheques should be made payable to **BUCCOO REEF TRUST** and mailed to: Buccoo Reef Trust, TLH Building, Milford Road, Scarborough, Tobago, West Indies. (Tel: 868 635-2000)

Please tick the contribution that suits you best

☼ Be a **FIGHTING CONCH** and stand up for conservation. TT$30 (US$5) Suggested for students.

☼ Be an **ANGEL FISH** and guard the reef for future generations TT$ 60 (US$ 10)

☼ Be a **TIGER GROUPER** and let your voice be heard for conservation TT$ 120 (US$ 20)

☼ Be a **GIANT BRAIN CORAL** and Show the scale of your commitment to marine conservation. TT$ 600 (US$ 100)

All Friends of the Buccoo Reef Trust will receive regular e-mails of our activities and opportunities for participation.

If you do not want to receive e-mails tick here ☼

The names of all our friends would be published on our website.

If you do not want to be listed tick here ☼