The launch of demonstration activities at the Project pilot sites – Grand Anse, Grenada and Windward, Carriacou drew great interest from the wider Grenadian public. Both launches saw participation from community members; private sector; civil society; students; and government officials. The ceremonies signified the start of demonstration activities for the project “Building Capacity for Coastal Ecosystem-based Adaptation in Small Island Developing States”. For the areas, coral reef restoration was the chosen adaptation option to be piloted as a strategy for Small Islands like Grenada in the fight against Climate Change. Both launches featured brief overviews of the coral nursery designs and layout, given by Dr. Sherry Constantine who is the lead for The Nature Conservancy (TNC) team spearheading the technical aspects of the coral restoration work. She stressed on the importance of healthy reefs for coastal communities and the Caribbean people, but cautioned that bringing reefs back to a healthy state would take a coordinated approach that includes changing behaviours and implementing effective schemes for management.

To facilitate the restoration work, the TNC team installed 30 coral nursery trees in Grand Anse and 15 coral nursery tables at Carriacou (Mabouya Island).
The Launch of Grenada's First Coral Nurseries

BY LEYANA ROMAIN

Each launch also showcased local talent through cultural performances by community members. Halim Abdul Wali, a member of the Grand Anse Taskforce Committee, delivered a striking excerpt from a play he is working on about the experiences of fishermen, which delighted the crowd.

For Windward, a student of the Dover Government School, Perez Mc Gillivary, gave a captivating performance of a poem written by the chairman of the Windward Taskforce Committee, Terrence Mc Lawrence, which brought much laughter and entertainment to those gathered.

Culminating the activities were the feature addresses given by Minister of Agriculture, Lands, Forestry, Fisheries and the Environment, Hon. Roland Bhola, for Grand Anse; and Deputy Prime Minister; Minister of Carriacou and Petite Martinique Affairs & Local Government; and Minister of Legal Affairs, Hon. Elvin Nimrod, for Windward. Both highlighted the serious implications of Climate Change for Grenada, Carriacou and Petite Martinique—in particular the Grand Anse and Windward areas—and the need to respond. Minister Bhola emphasized that “more community-based approaches, coupled with effective implementation of our policies and plans, [were] critical for a more holistic strategy and action plan for Climate Change.”

To signify the official launches, we were pleased to solicit support pledges for the nurseries from the Ministers; various government officials; and representatives from private sector and civil society present who were all pleased to be a part of launching the first coral nurseries in Grenada, and look forward to such efforts to restore our reefs!

When Corals Lose Their Colour—About Coral Bleaching

BY TARA WALCOTT

Coral reefs are fragile ecosystems that grow extremely slowly. They require very specific conditions to function and thrive. These include:

- sunlight for photosynthesis;
- a narrow water temperature range, between 23°C—29°C;
- clear waters to allow light to penetrate and reach the coral surface; and
- a specific salinity range; they are usually found in very salty environments.

Corals and Zooxanthellae, A Symbiotic Relationship

Corals are animals and can feed on live prey such as small fish and tiny creatures. However they have a closely linked relationship with microscopic algae, called zooxanthellae, which live within their hard limestone skeletons. The corals provide shelter and protection to the zooxanthellae, as well as other materials for manufacturing food, and in return the zooxanthellae provide the corals with some of the food they produce. Corals get the majority of their
nutrients from this liaison. Zooxanthellae also provide the corals with oxygen and assist in their removal of wastes.

The symbiotic relationship between the corals and zooxanthellae is essential to the continued existence and productivity of coral reefs. 90% of the organic materials created by the zooxanthellae through photosynthesis are used for the growth and health of the corals. Zooxanthellae are also responsible for the many beautiful colours of corals.

**Coral Bleaching – Losing Zooxanthellae**

In recent years, climate change has caused notable changes in the parameters that corals need to thrive, including water temperatures. When the waters warm, overheated corals become stressed and expel their pigmented zooxanthellae, becoming pale to white. This is called coral bleaching. If the thermal stress is severe and prolonged, the corals may be unable to recover and often die.

Yet, bleaching is a process, and can sometimes be reversed through the recovery of zooxanthellae by the corals. Corals that still have some colour left, but seem pale, are still alive and feeding but appear to be ‘sick’. When the corals’ white skeletons are completely exposed and there is no colour left, their tissues become completely damaged and they will experience mortality.

Coral bleaching does not typically affect an entire coral structure, nor a particular species. Many different species of zooxanthellae are able to thrive within one structure under a variety of conditions. Each species has a different tolerance level to temperature changes. So, while some may be unable to deal with the increasing temperature, others will be able to endure it. For this reason, bleaching often appears to be conspicuously patchy when seen in reef systems.

**Coral Reefs in Peril?**

Because of the different zooxanthellae species, coral reefs may be able to adapt to temperature changes. Yet the likelihood of this occurring decreases due to the strain the corals face from the rate at which sea surface temperatures are rising, and likewise from the pressures of our activities lowering their resilience. Without some meaningful intervention therefore, corals will continue to bleach as further warming of our oceans occur, leading to more damage and destruction of our coral reef systems. Thus, we must find a way to help our reefs persevere amid the shifting climatic conditions.

Tara is a Senior Coral Gardener with the Coastal EBA Project mainly working with the Grand Anse Pilot Site. She, along with her team of Community Coral Gardeners, is responsible for the coral nursery in Grande Anse Bay.
TNC was contracted to provide technical services for the Project. Specifically, TNC will:
(a) establish coral nurseries and conduct the first out planting onto the reefs;
(b) build local capacity for the coral nursery programme;
(c) assist with education and awareness; and
(d) develop a long-term sustainability plan.
The TNC Team is led by Dr. Sherry Constantine, Programme Manager for the Eastern Caribbean.

UNEP contracted photojournalist Kadir Van Lohuizen to capture problems Grenada currently faces from Climate Change, in particular sea level rise (SLR), and some of the solutions we have adopted so far.

Interviews were conducted, among others, with fishermen and public sector officials, and especially the Prime Minister, Dr the Rt. Hon. Keith Mitchell. The Photo Essay will be featured at the UNFCCC COP 21 in Paris, a landmark meeting of the international community to determine our collective global actions to address Climate Change.

Suitable locations for coral nurseries were identified during a Scoping Mission from May 18—21. The chosen coral nursery sites are (a) off Quarantine Point in Grande Anse Bay, Grenada, and (b) off Mabouya Island adjacent to Hillsborough, Carriacou.

The Project Office; TNC team and dedicated community members worked from June 23—July 2 to construct and install coral nursery trees in Grenada and coral nursery tables in Carriacou.
13 persons have been hired to date to be Community Coral Gardeners (CCGs). CCGs tend the corals in the nursery—cleaning off algae and sediments overwhelming them—and remove coral predators that would harm the corals. This job will be extended to work on the reefs after out planting.

All CCGs were SCUBA trained and received their PADI open water certification in July.

The coral nurseries will be marked off to regulate and restrict access, with 1 mooring buoy each and other marker buoys.

So far, the Grand Anse Pilot Site has been demarcated, with Carriacou still pending.

Consultations were held in May/June to continue exploring sustainable livelihoods options for the local communities in the Pilot Sites.

3 months after establishing the nurseries, the corals are doing well, and in many instances show encouraging signs of growth!!!
Acropora corals are among the most important of Caribbean corals. They are a type of stony or hard coral, and like other stony corals they build massive formations of hard limestone skeletons for protection. The difference between Acroporids and other stony corals is the many limbs they show in their structure. Because of this, they are also referred to as branching corals. They are fast-growing and found in shallow waters where there is high wave action.

There are only three species of Acroporids found in the Caribbean:

- Staghorn coral, called Acropora cervicornis;
- Elkhorn coral, or Acropora palmata; and
- Fused Staghorn coral, Acropora prolifera, which is a cross of the two.

Acropora corals are especially vital to the overall structure and health of Caribbean coral reef systems. Staghorn and Elkhorn are two of the top three species necessary for building up and growing the reefs. The three-dimensional structures they form play a critical role in providing habitats to support the many fishes and other creatures that live in these reef ecosystems. What’s more, they are especially necessary in order for the reef to provide protection to the coast from strong waves, and they encourage the formation of islands.

However Acroporids are especially under threat in the region, including in Grenada. They are critically endangered and have experienced over 90% decline since the 1980s, mainly due to disease outbreaks and increased covering when sediments are deposited. Other stressors include nutrient run-off and sewage discharge; dredging and coastal development; increased water temperatures; and overfishing.

A number of these threats are due to our daily actions; various activities we conduct on the island impact sensitive species like Acroporids. So, in order to save our reefs, we must re-evaluate how we manage our activities and embrace more sustainable practices.

Kerricia is the Project Manager for the Coastal EbA Project, within the Environment Division of the Ministry of Agriculture, Lands, Forestry, Fisheries & the Environment.