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INSIDE

Reef corals of Dominica - A limited resource

Part I Status 2000

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It has been almost a year since The Institute for Tropical Marine Ecology (ITME) commenced its year-round operations in Dominica. This was preceded by the warm welcome and steady assistance of the people and the Government of Dominica. ITME is now a Dominican institution providing university-level education in marine ecology. ITME also serves as a resource for researchers, local authorities, teachers, students and the Dominican public at large. As founder of ITME, and in appreciation for the support received, I am committed to sharing our insights and thus contributing to the conversation of Dominica's natural splendour. This shall be the first of a series of articles in which I present findings concerning reef corals of Dominica. In Part I Status 2000, I will outline the current situation of reef corals. Specific conservation issues and new findings will be presented in subsequent reports.

Coral is the common name for a group of marine animals that are "sessile", meaning that they live predominantly attached to the ground, feeding on food particles and microorganisms in the water column. Most people associate the term coral with stony corals which produce calcareous skeletons. The formation of these skeletons is a slow process, a few millimetres per year. Some species are solitary forming only one individual organism or polyp. Others form colonies composed of hundreds of individual polyps. A colony of about 1 meter diameter can be 200 years or older. Colonies are an important component of coral reefs. They display an array of shapes and colors, providing the habitat for a high diversity of organisms, and have become a major attraction for tourists and divers around the world.

Reef corals are highly specialgae are plants and need sunlight to grow and make their contribution to this relationship. This relationship is so important that the partners must live together in order to ensure their survival. This means that coral reefs will flourish in tropical seas with clear waters.

Based on these factors we can easily determine where to expect reef corals in Dominica. Since more people bathe and swim along the Caribbean coast of Dominica, let us focus on the Western shores.

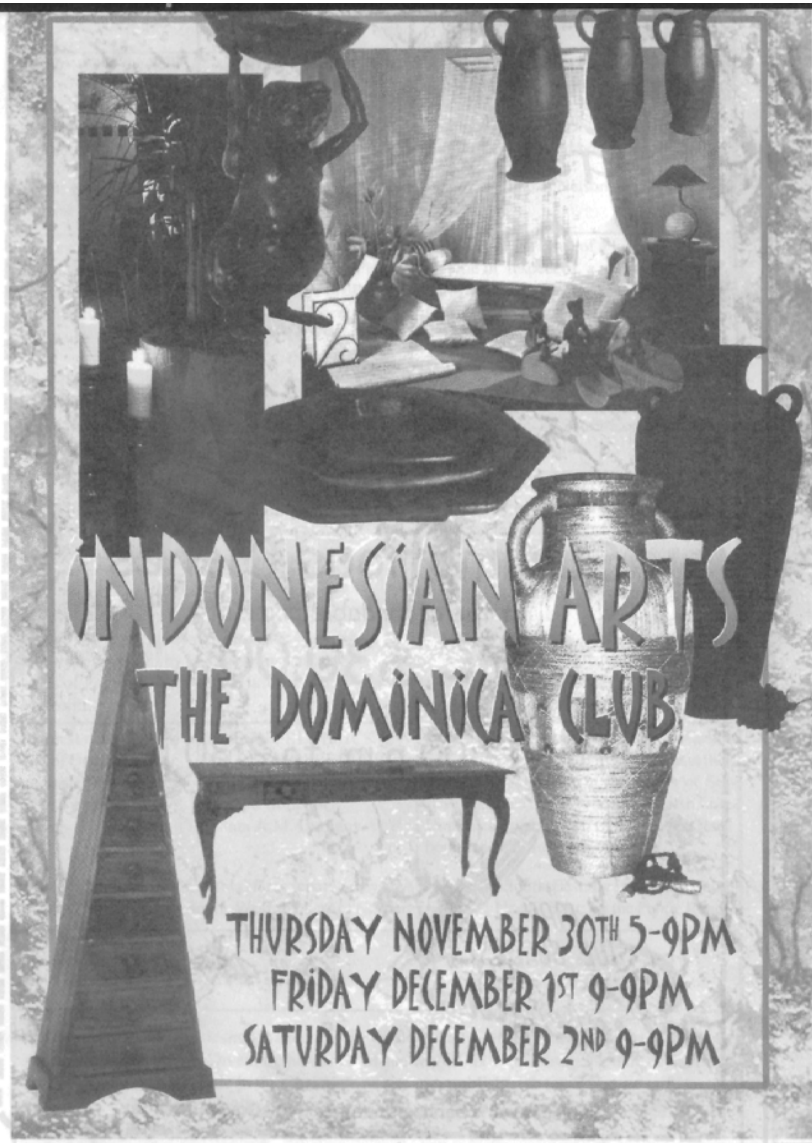
Corals can be found in rocky areas along the coast where the waters are clear. For example, the rocky outcrops by Secret Bay, Coubari Ravine, Tarreau Point, Mahaut, Pt. Ronde, Scott's Head. Areas that are influenced by the sediment output from rivers, such as the Layou and Belfast rivers have soft and unstable sea floors and do not offer conditions conducive to coral settlement and growth.

Depth is also a limiting factor for reef corals. Only the first 40-50 meters are sufficiently illuminated by sunlight to allow the symbiotic algae in coral tissues to

tention to the conservation of these "limited" natural resources of Dominica. Reef corals are part of Dominica's species diversity, which has maintained the livelihood of many peoples that have inhabited the island.

To date, 31 species of colonial stony reef corals have been identified. Where corals do flourish, they cover an average of 15% of the sea floor. In a few locations coral cover can be above 50%. Corals communities are very complex and vary depending on which species occur at what abundance and where. Initial investigations have shown that a variety of types of coral assemblages can be differentiated in Dominica.

Reef corals worldwide are affected by diseases and the loss of their symbiotic algae, a process called bleaching. In Dominica, bacterial infections known as Black Band Disease and White Plaque have been seen. So far the incidence of these diseases is low and can be considered "normal". Bleaching has also been observed. While scientists attribute bleaching to



ised organisms of tropical waters. Corals require a variety of "conditions" to prosper. Two essential conditions are a stable sea floor and clean waters.

(1) Corals need hard sea floor such as rocks (for example at Tarreau point), where they can attach and grow. In sandy areas (such as Pringles Bay) the *ground is not stable enough.* Waves could topple the colonies which would subsequently be buried by sediment.

(2) Corals need well-illuminated shallow waters. The reason for this is that corals have developed a symbiotic relationship with microscopic algae. The algae live in the tissues of the coral. This relationship is very intriguing, as it is based upon the "exchange" and recycling of gases and nutrients. Both partners, the coral and the algae, benefit from this symbiosis. However, allive. So, even where we have stable grounds, like some of the steep drop offs in Soufriere Bay, reef corals will only be found in the shallower water.

This leads us to an important conclusion about the existing conditions for coral growth in Dominica. Based on the fact that this young volcanic island has a very narrow and steep shelf, and that many areas are characterized by an unstable sea floor, Dominica has a relatively small area of coral growth. Compared to the Bahamas or Guadeloupe, where extensive portions of *stable shelf are in shallow* well-illuminated depths, Dominica has few potential reef coral habitats.

Another critical conclusion that can be drawn from the examination of Dominica's coral is that there are very few sections where true coral reefs exist. By definition coral reefs are massive constructions with foundations that are made up of mostly reef-related organisms including corals. In Dominica, the narrow shelf provides little protection from storms and hurricanes. Therefore corals are often disturbed and killed, and have not built "true reefs". This cannot and should not be interpreted as a negative aspect of the Nature Island of the Caribbean. It is simply part of the reality of this island, as are the luscious rainforests and the tall volcanoes. However, this should be an invitation to pay special atelevated sea temperatures, as they arise during El Nino events, sea temperatures in Dominica were not elevated during the past year when bleaching was observed. In Dominica the causes for bleaching may thus lie elsewhere and remain undetermined.

The east coast is less explored, but it can be assumed that the coral communities there differ from those along the west coast. This is based on the examination of coral rubble washed up on the Atlantic side of Dominica where some species found in large *numbers are virtually* absent on the Caribbean side. More detailed explorations of the Atlantic waters will follow in the coming years.

In conclusion, the coral assemblages of Dominica are comparatively small, in terms of total area, and fragile by nature, given the paucity of true coral reefs. The diversity of corals and coral reefs around the World is severely threatened by human activities. Similar to the situation revolving around the deforestation of the Amazon rainforests, the destruction of corals and coral habitats is a greater loss than the mere loss of animals and plants. In Dominica, corals have a narrow margin of survival. Let us grant this living organism the space and protection to prosper, as Dominicans have prospered from its presence for hundreds of years.