

Importance of the Stony Coral Tissue Loss Disease (SCTLD) on the reefs of Guadeloupe Island (Lesser Antilles)

Importancia de la enfermedad de pérdida de tejido en los corales duros (SCTLD : *Stony Coral Tissue Loss Disease*) sobre los arrecifes coralinos de la isla de Guadeloupe (Antillas Menores)

Importance de la maladie de perte de tissu corallien (SCTLD : *Stony Coral Tissue Loss Disease*) sur les récifs coralliens de l'île de Guadeloupe (Petites Antilles)

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EXTENDED ABSTRACT

Coral diseases were discovered by Arnfried Antonius in the Caribbean in 1973 (Antonius, 1976). Today, about fifty coral diseases are known around the world and about fifteen affect the Scleractinian corals of the French Antilles Islands (Bouchon & Bouchon-Navaro, 2017). The last coral disease identified in the Caribbean region appeared in Florida in 2014, following an episode of coral bleaching. Initially named "white plague disease" it is now known as "Stony Corals Tissue Loss Disease" (SCTLD) (Precht *et al.*, 2016). In addition to marine currents, ship ballast waters are suspected to be also a vector of dissemination of the disease (Dobbelaere *et al.*, 2020; Dahlgren *et al.*, 2021).

That disease spread to the Caribbean region and affected many countries and islands. It was observed for the first time in Guadeloupe Island in May 2020 where, like in Florida, it appeared after an episode of bleaching that stroke the corals of the island from September 2019 to January 2020. Since then, the disease has rapidly spread to all the reefs of the island.

SCTLD signs consist of plague of necrosis coral tissue becoming coalescent that rapidly expand to most of the colony surface.

About 60 species of corals are known from the French Antilles (Bouchon & Laborel, 1986; 1990). The coral assemblage on each reef in Guadeloupe Island includes approximately 40 stony coral species. After SCTLD reached them, about half of the coral species of the reef was affected by that disease. This is a new event when compared with previous diseases which affected in the past, even massively, one or a small number of coral species simultaneously.

SCTLD impacts were quantitatively monitored on certain reefs of Guadeloupe using a system of permanent transects settled in the framework of the GCRMN (Global Coral Reef Monitoring Network). On the other reefs around Guadeloupe Island, rapid assessments were conducted to estimate the spatial extent of the disease, the abundance of the affected corals as well as the rate of recent coral mortality at each reef site. Rapid assessments were conducted using a roving diver technique: observers swam over the reef haphazardly for at least 60 min, identifying all corals and rating, for each species, the percentage of infected colonies as well as those recently dead (not overgrown with algae).

Twenty-two coral species are impacted in Guadeloupe Island. Among them, some present a higher sensitivity to the disease than others, that is to say in decreasing order of importance: *Diploria labyrinthiformis*, *Meandrina meandrites*, *Montastrea cavernosa*, *Orbicella faveolata*, *O. annularis*, *Colpophyllia natans*, *Siderastrea siderea*, *Agaricia agaricites*, *Eusmilia fastigiata*... The most resistant species appeared to belong to the Poritidae family (*Porites astreoides*, *P. divaricata*, *P. furcata*). Until now, the disease has spared the two endangered species of acroporid corals in the Caribbean: *Acropora palmata*, and *A. cervicornis*, as well as their hybrid *A. prolifera*. The tissue lesions on a colony spread from 2 to 3 centimeters per day. That is to say that a small coral can be killed in one day. For bigger colonies, the final outcome is lethal after one week to one month for most colonies.

No seasonal effect could be observed. Likewise, no link was found between the abundance of corals affected and the level of coastal pollution on the sites.

At the end of the year 2021, SCTLD is still virulent on all the reefs. Nowadays, the abundance of the impacted coral species has drastically dropped around Guadeloupe Island. On some reefs, some species have totally disappeared (*Meandrina meandrites*, *Diploria labyrinthiformis*, *Colpophyllia natans*...).

Nevertheless, healthy adult corals among the most affected species can be observed in areas of strongly impacted by the disease. Furthermore, the recruitment of coral juveniles was observed in 202 even among the most vulnerable species. These two observations bring some hope about the possible resilience of coral assemblages in Guadeloupe Island.

KEYWORDS: Coral disease, SCTLD, Lesser Antilles, Guadeloupe Island

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