Spatiotemporal and species-specific patterns of diseases affecting crustose coralline algae in Curaçao

G. Quéré [1,2], R. S. Steneck[3], M. M. Nugues[2,4,5]

1 Leibniz Center for Tropical Marine Ecology (ZMT), Bremen, Germany 2 CRIOBE - USR 3278, EPHE - CNRS - UPVD, Perpignan, France 3 Darling Marine Center, School of Marine Sciences, University of Maine, USA 4 Laboratoire d'Excellence 'CORAIL', Perpignan, France 5 CARMABI Foundation, Willemstad, Curaçao

Distribution and abundance of coral diseases have been well documented, but only a few studies considered diseases affecting crustose coralline algae (CCA), particularly at the species level. We investigated the spatiotemporal dynamics of diseases affecting CCA along the south coast of Curaçao, southern Caribbean. Two syndromes were detected: the Coralline White Band Syndrome (CWBS) previously described and the Coralline White Patch Disease (CWPD) reported here for the first time. Diseases were present at all six study sites, and our results did not reveal a relationship between disease occurrence and human influence. Both diseases were more prevalent on the shallower reef flat than on the deeper reef slope, and during the warm/rainy season than during the cold/dry season. The patterns observed were consistent with a positive link between temperature and disease occurrence. Reef flat communities were dominated by *Neogoniolithon mamillare* and *Paragoniolithon solubile,* whereas deeper habitats were dominated by *Hydrolithon boergesenii*. Diseases affected all the species encountered, and no preferable host was detected. There was a significant relationship between both disease occurrences and CCA cover. Monitoring of affected patches revealed that 90 % of lesions in CWBS increased in size, whereas 88 % of CWPD lesions regenerated over time. CWBS linear progression rate did not vary between seasons or species and ranged from 0.15 to 0.36 cm month-1, which is in the same order of magnitude as rates previously documented. We conclude that diseases have the potential to cause major loss in CCA cover, particularly in shallow waters. As CCA play a key role in reef ecosystems, our study suggests that the emergence of diseases affecting these algae may pose a real threat to coral reef ecosystems. The levels of disease reported here will provide a much-needed local baseline allowing future comparisons.

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