



Taxonomy and distribution of non-geniculate coralline red algae (Corallinales, Rhodophyta) on rocky reefs from Ilha Grande Bay, Brazil

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Abstract

Non-geniculate coralline red algae are very common along the Brazilian coast occurring in a wide variety of ecosystems. Ecological surveys of Ilha Grande Bay have shown the importance of these algae in structuring benthic rocky reef environments and in their structural processes. The aim of this research was to identify the species of non-geniculate coralline red algae commonly present in the shallow rocky areas of Ilha Grande Bay, Brazil. Based on morphological and anatomical observations, three species of non-geniculate coralline algae are commonly present in the area: *Lithophyllum corallinae*, *L. stictaeforme* and *Hydrolithon reinboldii*. Here we provide descriptions of these species and provide a key to their identification. This study represents the first record of *H. reinboldii* from Brazil.

Key words: Hydrolithoideae; Lithophylloideae; taxonomy

Introduction

Non-geniculate coralline red algae (Corallinales and Sporolithales, Rhodophyta) are very common along the Brazilian coast (Oliveira-Filho 1977, Kempf 1970, 1980, Horta 2000). These algae occur in a wide depth range and from a variety of ecosystems ranging from rhodolith beds (Amado-Filho *et al.* 2007, 2010, Villas-Bôas *et al.* 2009, Farias *et al.* 2010, Bahia *et al.* 2011, Henriques *et al.* 2012, Tâmega *et al.* 2013) to coral reefs (Villaça & Pitombo 1997, Figueiredo 1997, Testa 1997, Costa *et al.* 2002, Figueiredo & Steneck 2002, Tâmega & Figueiredo 2007, Mariath *et al.* 2012, Tâmega *et al.* 2014). However, despite their ubiquity, few detailed accounts (e.g. Tâmega & Figueiredo 2005, Nunes *et al.* 2008) of species within specific rocky habitats have been published.

In Ilha Grande Bay, south of Rio de Janeiro State, most benthic marine algal research have been floristic accounts (Figueiredo *et al.* 2004) or quantitative accounts of the common species (Figueiredo & Tâmega 2007), all of which have shown the importance of non-geniculate coralline red algae in the structure of rocky reef environments and in their structural processes. Until now, no attempt has been made to identify the non-geniculate coralline algae from this location. The aim of this study was to: 1) identify the species of non-geniculate coralline red algae commonly present in shallow rocky areas of Ilha Grande Bay, Brazil; and 2) determine if there are any distributional patterns in the species composition.

Materials and methods

Extensive sampling was done at seven localities inside and outside of Ilha Grande Bay, Rio de Janeiro State, Brazil (Fig.

reinboldii in the western Atlantic. Although Wynne (2011) included *H. reinboldii* in his “checklist of benthic marine algae of the tropical and subtropical western Atlantic” (which covers the region from the warm temperate eastern United States to southern Brazil), no description of the species was provided to validate the record, until now. *Hydrolithon reinboldii* has been reported to occur mostly as free-living rhodoliths (Adey *et al.* 1982, Penrose & Woelkerling 1988, Mendoza-Gonzalez *et al.* 2009). In this study we found the species to occur largely epilithically, but also epizoically. While *L. corallinae* and *L. stictaeforme* have largely been reported to be epilithic and epizoic in most other areas of the world (see e.g. Womersley 1996), until now both species have only been documented to occur as free-living rhodoliths in Brazil (see Villas-Boas *et al.* 2009, Amado-Filho *et al.* 2010, 2012). This study therefore not only represents a new confirmed record for the western Atlantic, but also presents new data for those species already reported from the region. Ongoing exploration of the Brazilian exclusive economic zone is showing that as a region, Brazil is rich in diversity of non-geniculate coralline red algae. Vast areas of Brazilian rocky habitats still need to be studied and preliminary data (Riosmena-Rodriguez unpublished data) seems to suggest that Brazilian coralline diversity varies more spatially than temporally. Until more directed research of the coastal environments of Brazil proves otherwise, it seems that shallow habitats like coral reefs (Tâmega and Figueiredo 2007, Mariath *et al.* 2012, Tâmega *et al.* 2014) have a low species richness compared to deeper rhodolith habitats (Villas-Boas *et al.* 2009, 2014, Bahia *et al.* 2011, Amado-Filho *et al.* 2010, 2012, Henriques *et al.* 2012).

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