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Two new species of *Haliclona* Grant, 1836 (Haplosclerida: Chalinidae) from Sergipe State, Brazil

JOANA SANDES[1], ANDRÉ BISPO[2] & ULISSES PINHEIRO[1,3]

[1]*Laboratório de Porifera – LABPOR, Departamento de Zoologia, Centro de Ciências Biológicas, Universidade Federal de Pernambuco, , Avenida Prof. Moraes Rêgo, 1235, Cidade Universitária, CEP 50670-901, Recife, PE, Brazil.*
E-mail: jcfsandes@gmail.com; uspinheiro@hotmail.com
[2]*Setor de Comunidades Bentônicas, Instituto de Ciências Biológicas e da Saúde, Universidade Federal de Alagoas, Rua Aristeu de Andrade, 452, Farol, CEP 57021-090, Maceió, AL, Brazil. E-mail: afelipebispo@gmail.com*
[3]*Corresponding author. E-mail: uspinheiro@hotmail.com*

Abstract

Haliclona is one of the most species-rich genera among Demospongiae, but with only 11 species recorded for the Brazilian coast. Here we describe two new species of *Haliclona* collected by trawling at Sergipe State (Northeastern Brazil). *Haliclona* (*Halichoclona*) *dura* **sp. nov.** is distinguished by the combination of confused choanosome with dense reticulation, oxeas with stepped and mucronate points, color dark brown externally and light beige internally, consistency firm and incompressible. *Haliclona* (*Soestella*) *brassica* **sp. nov.** is set apart by the combination of a choanosomal skeleton with rounded meshes, strongyles, raphides, color beige and consistency soft.

Key words: Porifera, Demospongiae, biodiversity, Western Atlantic

Introduction

Haliclona is the richest and most abundant taxon within the family Chalinidae (de Weerdt, 2002), with more than 400 species (van Soest *et al.*, 2013). The genus is distributed worldwide, occurring from polar to tropical areas and from shallow to deep-water environments (de Weerdt, 2002).

Despite this high species richness, only 11 species of *Haliclona* are registered from the Brazilian coast. Six of them are provisional endemic, while the five other co-occur in the Caribbean (Hajdu *et al.*, 2011; Muricy *et al.*, 2011; Bispo *et al.*, 2014).

The high number of species in *Haliclona* may reflect the difficulty in working with the systematics of this group, since many authors indicated the high variability and paucity of characters as the main taxonomic problems in Chalinidae (de Weerdt, 1989, 2000; McCormack *et al.*, 2002; Redmond *et al.*, 2007).

Phylogenetic trends revealed by study of ribosomal RNA 18S and 28S (McCormack *et al.*, 2002; Redmond *et al.*, 2007), and the mitochondrial genes *cox1* and *nad1* (Redmond *et al.*, 2011) demonstrated that many of the families and genera within Haplosclerida, including *Haliclona*, are polyphyletic. This means that the current classification needs a comprehensive revision.

Independent of these supra-specific problems in the systematics of the Haplosclerida, there are still many new species that deserve a formal description and a name. In this paper, we describe two new species of *Haliclona* collected along the coast of the Sergipe State (Northeastern Brazil Ecoregion), a region where the sponges' biodiversity remains almost unknown (see Muricy *et al.*, 2011).

Material and methods

Samples were collected in 2003, on the continental shelf of Sergipe State, by trawling. The specimens were

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Spicules (Fig. 4D–F)**.** Strongyles, straight or slightly curved, 111–148.4–195/3–3.8–4.5 μm (Fig. 3D). Raphides, 32–46.5–125 μm (Fig. 3E), rare trichodragmata (Fig. 3F).

Ecology. Found at 20 m depth, associated to hydroids.

Distribution. Sergipe State (Northeastern Brazil Ecoregion).

Etymology. The specific epithet derives from the shape of lamellate encrustations like a cabbage, which corresponds to brassica in Latin.

Remarks. *Haliclona* (*Soestella*) *brassica* **sp. nov.** is the only *Haliclona* in the Tropical Western Atlantic with the combination of strongyles and raphids. Only one other species in this region has strongyles: *H*. (*Reniera*) *strongylophora* Lehnert & van Soest, 1996. However, it is distinguished from the new species by the unispicular ectosome, isotropic and uni- to paucipiscular choanosome and absence of raphides. Furthermore, the strongyles are more robust (4–10 μm) and the color is dark brown in spirit.

Haliclona (*Reniera*) *implexiformis* (Hechtel, 1965), *H.* (*Reniera*) *tubifera* (George & Wilson, 1919), *H.* (*Soestella*) *caerulea* (Hechtel, 1965) and *H.* (*Halichoclona*) *albifragilis* (Hechtel, 1965) possess oxeas with strongyloid modifications, but they never have strongyles exclusively and they lack raphides entirely.

Two other species of *Haliclona* (*Soestella*) in the Tropical Western Atlantic also possess raphids as microscleres: *H.* (*S.*) *luciensis* de Weerdt, 2000 and *H.* (*S.*) *smithae* de Weerdt, 2000. However, they differ from *H.* (*S.*) *brassica* **sp. nov.** by the absence of strongyles.

Bispo *et al.,* 2014 recently described a new species of *Haliclona* (*Soestella*) from the Eastern Brazil Ecoregion. But it is a tubular sponge with a remarkable subsuperficial reticulation that is visible to the naked eye, possessing oxeas as megascleres.

Discussion

The biodiversity of sponges from the Sergipe State (Northeastern Brazil Ecoregion) remained almost unexplored until very recently: up to 2011, only ten species were reported to this sector of the Brazilian coast (see Muricy *et al*., 2011). Nevertheless, recent (Sandes & Pinheiro, 2013; this study) and ongoing studies are helping to fill the gap on the knowledge of the spongiofauna of this region.

Furthermore, the two new species here described are also an addition to the known biodiversity of Chalinidae on the Brazilian coast. Now, there are thirteen species of *Haliclona* registered for the Brazilian coast (Bispo *et al*., 2014; this study). For a detailed overview of the previous records of *Haliclona* from Brazil, see Bispo *et al*. (2014).

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