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Clathria (*Thalysias*) (Poecilosclerida: Demospongiae: Porifera) from Brazil: New species and redescription of *Clathria* (*Thalysias*) *basiarenacea* (Boury-Esnault, 1973)

HELCY GALINDO[1], JOHN N.A. HOOPER[2,3] & ULISSES PINHEIRO[1,4]

[1]*Universidade Federal de Pernambuco, Centro de Ciências Biológicas, Departamento de Zoologia, Av. Nelson Chaves, s/n Cidade Universitária CEP 50373-970, Recife, PE, Brazil*
[2]*Queensland Museum, PO Box 3300, South Brisbane, Queensland, Australia, 4101*
[3]*Eskitis Institute for Drug Discovery, Griffith University, Mount Gravatt Research Park, Nathan, Queensland, Australia, 4111*
[4]*Corresponding author. E-mail: uspinheiro@hotmail.com*

Abstract

The subgenus *Clathria* (*Thalysias*) Duchassaing & Michelotti, 1864 has 97 valid species, of which 27 are recorded in the Atlantic Ocean. However, only three species are known from Brazil so far. Here we provide the redescription of *Clathria* (*Thalysias*) *basiarenacea* (Boury- Esnault, 1973), based on the discovery of new characters (additional category of auxiliary styles, and details of spicules), and describe a new species of *Clathria* (*Thalysias*) *repens* **sp. nov.**, that differs from sister species in having a live orange color, a massively encrusting repent growth form with lamellate folds and anastomosed projections, and three categories of structural styles, of which the two auxiliary styles have microspined heads. We also invalidate the record of *Clathria* (*Thalysias*) *procera* (Ridley, 1884) for Brazil.

Key words: Brazil, marine sponges, Porifera, Poecilosclerida, new species

Introduction

Clathria (*Thalysias*) (Duchassaing & Michelotti, 1864) is the third most diverse subgenus of the genus *Clathria*, with 97 described species, of which 27 occur in the Atlantic Ocean. The subgenus is characterized by two categories of auxiliary spicules forming a specialized ectosomal and subectosomal skeleton. The smaller style or subtylostyle usually form discrete bundles or a continuous palisade perpendicular to the surface, and the larger style or subtylostyle usually forms brushes supporting the smaller ectosomal spicules. Most species of *Thalysias* also have echinating accessory megascleres protruding from the fibres, although sometimes the latter may be rare or lost altogether (Hooper 2002). This subgenus is poorly represented in Brazil, where only three species have been recorded so far: *Clathria* (*Thalysias*) *basiarenacea* (Boury-Esnault 1973), *Clathria* (*Thalysias*) *minuta* (Van Soest, 1984), and *Clathria* (*Thalysias*) *procera* (Ridley, 1884). *Clathria* (*T.*) *basiarenacea* was described from a fragment dredged during the "Calypso" campaign in Santo Antônio Bay, Archipelago of Fernando de Noronha, without designation of holotype (Fig.2). Hooper (1996), in a revision of the Family Microcionidae, indicated the above fragment was the holotype for the species, but since it was not originally designated as such by Boury-Esnault (1973) it is hereby designated lectotype of this species. In this paper, we provide the description of a new species of *Clathria (Thalysias)* from the Atlantic Ocean, and the redescription of *Clathria* (*Thalysias*) *basiarenacea* (Boury-Esnault, 1973).

Material and methods

We collected two specimens of *Clathria* (*Thalysias*) *repens* **sp. nov.** from Pernambuco State, Brazil. The specimens

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differs from *C.* (*T.*) *jolicoeuri* (Topsent, 1892), *C.* (*T.*) *membranacea* (Thiele, 1905), *C.* (*T.*) *nervosa* (Lévi, 1963), *C.* (*T.*) *venosa*, and *C.* (*T.*) *virgultosa*. By the presence of toxas it differs from *C.* (*T.*) *amabilis, C. (T.) chelosigmoidea Zea, Rodriguez & Martinez,* 2014*, C.* (*T.*) *cullingworthi*, *C.* (*T.*) *lissoclada* (Burton, 1934), *C.* (*T.*) *nervosa, C.*(*T.*) *opalina* Zea, Rodriguez & Martinez, 2014, *C.* (*T.*) *sulfocleistochela* Zea, Rodriguez & Martinez, 2014, and *C.* (*T.*) *vacata*. By the presence of chelae it differs from *C.* (*T.*) *amabilis*, *C.* (*T.*) *fascicularis*, *C.* (*T.*) *oxeota* (Van Soest, 1984), *C.* (*T.*) *oxitoxa* and *C.* (*T.*) *vacata.* And differs from *C.* (*T.*) *collosclera* Van Soest, 2009 which has unique collosclera-type chelae. Finally, by the absence of oxeas it differs from *C.* (*T.*) *oxitoxa*, and of acanthotrongyles from *C.* (*T.*) *fascicularis.*

The most similar species of *Clathria* (*Thalysias*) *repens* **sp. nov.** is *C.* (*T.*) *basiarenacea*. However, it differs from the latter by having three categories of toxas, one accolada type, while *C.* (*T.*) *repens* **sp. nov.** has only two categories and lacks the accolada toxa. Furthermore, the acanthostyles of *C.* (*T.*) *repens* **sp. nov.**, present a high concentration of spines, and the styles II are smaller with microspined head, against the styles II that are bigger with smooth and deformed heads from *C.* (*T.*) *basiarenacea*.

Discussion

Ridley & Dendy (1887) studied sponges collected from the *Challenger* Expedition and recorded *Rhaphidophlus gracilis* from Brazil, although this species was originally described from Australia. At the time, they observed that the Brazilian specimens differed in color from the original description, but they did not provide any other information. Hooper (1996), in his revision of the Family Microcionidae, synonymized *Rhaphidophlus gracilis* with *Clathria* (*T.*) *procera*, but did not include the distribution of the Brazilian species, and the author did not re-examine the Brazilian specimens (Hooper pers. comm.). However, Muricy *et al.* (2011) validated the record of *C. (T.) procera* from Brazil based on the synonymy proposed by Hooper (1996). Considering the different habitats of *C. (T.) procera* from Australia and the collections from *Challenger* Expedition from the Brazilian coast, it is likely that the latter is a new species.

Recently, Van Soest *et al.* 2013 described West African *C.* (*T.*) *minutoides* and noted that it was very similar with *C*. (*T.*) *minuta* from the West Indies. Differences consisted of small variations in the size of spicules. The main and decisive argument for their separation into different species was the geographic distance between both species. Therefore is necessary to review Ridley & Dendy's (1884) material to determine if it is a different species. On this basis we consider the record of *C. (T.) procera* from Brazil, as invalid and potentially representing a new species of *Clathria (Thalysias)*.

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