Four new species of Plakinidae (Porifera: Homoscleromorpha) from Brazil

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Abstract

Seven species of Plakinidae are currently known from Brazil, belonging to genera Plakina (P. trilopha), Plakinastrella (P. microspiculifera, P. onkodes), and Plakortis (P. angulospiculatus, P. halichondrioides, P. insularis, and P. microrhabdifornia). In this study we describe four new species of the genera Plakinastrella and Plakortis, increasing the number of plakinid species in Brazil to eleven.

Plakortis petrupaulensis sp. nov. is encrusting, light brown; the skeleton is disorganized with few traces of reticulation; lacunae are absent; the spicules are diods and tuberculate microrhabds; spheres are common and triods are absent.

Plakortis spinalis sp. nov. is encrusting, gray, cartilaginous, has a reticulated ectosomal skeleton, and is distinguished by the spines in some of the diods and triods; microrhabds are also tuberculate and smooth spheres are common.

Plakortis potiguarensis sp. nov. is encrusting, brown with gray tinges, and cartilaginous; the skeleton is disorganized and scarce, composed of thin, irregular diods, triods and relatively large microrhabds. Plakinastrella globularis sp. nov. has a globular shape and dark blue color in vivo; the ectosomal skeleton has a double tangential reticulation and the choanosomal skeleton is reticulated. The spicules are diods, triods, calthrops and microrhabds; spheres are common. Two of the new species have characters previously unknown in their respective genera: the spined diods and triods of Plakortis spinalis sp. nov. and the blue color and microrhabds of Plakinastrella globularis sp. nov. The presence of microrhabds in Plakinastrella suggests a close relationship of this genus with Plakortis.

Key words: Plakortis, Plakinastrella, taxonomy, São Pedro e São Paulo Archipelago, Fernando de Noronha Archipelago, Potiguar Basin, Salvador, Almirante Saldanha Seamount

Introduction

The scientific interest in the Class Homoscleromorpha (Phylum Porifera) has increased in recent years due to molecular phylogenetic studies that indicate they may be closer to the main line of animal evolution than the other sponge groups (Gazave et al. 2010). The presence of a basement membrane made of type IV collagen and the asynchronous spermatogenesis inside of a same spermatocyst also support this relationship (Boute et al. 1996; Ereskovsky et al. 2009a; Muricy & Diaz 2002). The presence of acrosome in spermatozoa was considered an exclusive character of Homoscleromorpha among the Porifera (Bacetti et al. 1986; Muricy & Diaz 2002), but an atypical acrosome was recently found in spermatozoa of Crambe crambe (Riesgo & Maldonado 2009; Ereskovsky 2010). The Homoscleromorpha further differ from other sponges by their exclusive cinctoblastula larvae and the presence of flagellated exopinacocytes (Boury-Esnault et al. 1990, 2003).

The classification of the Homoscleromorpha has changed considerably over the years, with its ranking elevated from suborder to order, subclass and class (Topsent 1895; Dendy 1905; Lévi 1973; Gazave et al. 2010, 2012). These changes reflected the increasing knowledge of their biology and the discovery of new exclusive characters within the phylum. The phylogenetic relationships within the group are also challenging: its two families Oscarellidae (without skeleton) and Plakinidae Schulze 1880 (with siliceous spicules) have been merged in the end of the 20th century (Solé-Cava et al. 1992; Diaz & van Soest 1994; Boury-Esnault et al. 1995; Muricy et al. 1996, 1999) but both are now accepted as valid again (Gazave et al. 2010, 2012, 2013). The family Plakinidae currently