



<http://dx.doi.org/10.11646/zootaxa.3764.5.3>

<http://zoobank.org/urn:lsid:zoobank.org:pub:66502B5F-5DBF-4C0C-A09A-6E4D6196D032>

Three new species of the genus *Paraleucilla* Dendy, 1892 (Porifera, Calcarea) from the coast of Bahia State, Northeastern Brazil

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Abstract

Three new species of calcareous sponges from the coast of Bahia State, NE Brazil are described. All of them belong to the genus *Paraleucilla* (Calcaronea, Leucosolenida, Amphoriscidae): *P. solangeae* sp. nov., *P. oca* sp. nov., and *P. incomposita* sp. nov. The number of species recorded from the Bahia coast has thus increased from 10 to 13. Including these new species, there are now 50 calcareous sponge species known from the entire Brazilian coast. *Paraleucilla* is now composed of 11 species, six of them occurring along the southwestern Atlantic Ocean. The remaining species occur mainly in the Indian Ocean, and also in the Pacific Ocean, Red Sea and Mediterranean Sea. An identification key for all *Paraleucilla* species is provided. This paper is dedicated to the memory of Professor Solange Peixinho, to acknowledge her contribution to our understanding of the biodiversity of Calcarea from the Bahia coast in Brazil.

Key words: Calcareous sponges, taxonomy, systematics, Calcaronea, Amphoriscidae

Introduction

The class Calcarea comprises marine sponges with spicules composed of calcium carbonate (Borojevic *et al.* 2002). It is traditionally a neglected group of sponges, which can be explained by the cryptic habitat, small size, and unattractive body color of these sponges (frequently white or beige). Today—as in the past—there are very few spongiologists dedicated to the study of calcareous sponges, which limits our knowledge of calcarean diversity (there are ca. 680 described species, which is less than 10% of the species known to the phylum Porifera; van Soest *et al.* 2012).

In the last decade, studies on the taxonomy of Calcarea in Brazil have progressed considerably. These studies have been mainly focused on the southeastern (Klautau *et al.* 2004; Rossi *et al.* 2006; Azevedo & Klautau 2007; Lanna *et al.* 2007a) and northeastern (Borojevic & Peixinho 1976; Muricy & Moraes 1998; Moraes *et al.* 2003; Lanna *et al.*, 2009) Brazilian coasts. Even in these regions, however, the diversity of calcareous sponges remains largely unknown, as revealed by the frequent descriptions of species that are new to science.

Bahia State is located in northeastern Brazil (Figure 1). It has the longest coastline (ca. 1,000 km) and the narrowest continental shelf of all the Brazilian states (ca. 8 km width close to Salvador city). According to Spalding *et al.* (2007), Bahia is situated in the “Tropical Southwestern Atlantic” province, and it corresponds to the “Northeastern Brazil” marine ecoregion. Along the Bahia coast, different ecosystems can be found, including coral and algal reefs, mangroves, tide pools, sandy beaches, rocky shores and many others [see Hajdu *et al.* (2011) for more information]. Due to their high sponge diversity, some Bahian areas—such as Todos os Santos Bay—are considered to be “sponge paradises” (Hajdu *et al.* 2011; Muricy *et al.* 2011). Nevertheless, most of our knowledge about Bahian marine sponges is based mainly on the study of demosponge species; the diversity of Calcarea is clearly underrepresented. Presently, there are 10 species of Calcarea recognized on the Bahia coast (Muricy *et al.* 2011; Cavalcanti *et al.* 2013): *Amphoriscus synapta* (Haeckel, 1872), *Leucilla uter* Poléjaeff, 1883, *Grantia kempfi* Borojevic & Peixinho, 1976, *Leucandra armata* (Urban, 1908), *Leucandra barbata* (Duchassaing & Michelotti, 1864), *Sycettusa flamma* (Poléjaeff, 1883), *Vosmaeropsis sericata* (Ridley, 1881), *Guancha tetela* Borojevic &

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