Demospongiae (Porifera) of the shallow coral reefs of Maceió, Alagoas State, Brazil

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Abstract: Sponges occurring at Alagoas State reefs, in north-eastern Brazil, are poorly known. This work reports on the sponges of Maceió coral reefs, the state’s capital. A total of 29 species were identified so far. These were Agelas dispar, Amphimedon aff. complanata, A. viridis, Biemma microacanthosigma, Chalinula molitha, Chondrilla aff. nucula, Chondrosia collectrix, Cinachyrella apion, C. alloclada, Cliona aff. celata, C. varians, Dragmacidon reticulatum, Dysidea ethera, Echinodictyum dendroides, Geodia corticostylifera, G. papyracea, Haliclonia curacaeoensis, H. mangelis, H. melana, Iotrochota birotulata, Ircinia strobilina, Mycale diversisigmata, Niphates erecta, Placospongia aff. melobesioides, Scopalina ruetzleri, Spirastrella coccinea, S. hartmani, Tedania ignis and Tethya sp. The numbers of species in each station varied from 16 to 24. Mycale diversisigmata is a first record for the southern Atlantic. These preliminary results indicate the occurrence of a moderately rich sponge fauna at the Maceió reef’s area, arguing for stricter control on human impact on these urban reefs.

Keywords: Alagoas, Demospongiae, coral reef, SW Atlantic

Introduction

Sponges are among the most important components of coral reef benthic communities, frequently exceeding hermatypic corals in diversity and biomass. Each species’ abundance and distribution within a coral reef sponge community is related to biotic and abiotic parameters such as recruitment, spatial competition, luminosity, sedimentation and substrate type (Wiedenmayer 1977, Zea 1987, Díaz and Rützler 2001, Rützler 2002, Valderrama and Zea 2003).

Brazil has a large coastline, with a faunistic component which is still poorly studied in general, and Porifera stands out as one of the least studied taxa. Very few coastal states in Brazil have a well-known sponge fauna (e.g. Hajdu et al. 1996, 1999, Muricy and Silva 1999), and comprehensive knowledge of species distributions, habitat requirements, reproduction and all sorts of ecological interactions are virtually unknown for the entire coast.

The taxonomy of marine sponges of north-eastern Brazil (geographic north-east – coastal states Bahia to Ceará; not regional, geopolitical north-east – coastal states Bahia to Maranhão) has been the focus of a very few studies, and even fewer described species from Alagoas, mostly from deep-waters. The latter date back to the H.M.S. ‘Challenger’ expedition, three collecting stations having been set off the state of Alagoas (st. 122b, 122c, 123). The species reported from this material were Cacospongia levis (Poljáeff, 1884) and Stelospongus longispinus Duchassaing and Michelotti, 1864 [= Ircinia strobilina (Lamarck, 1816)], reported by Poljáeff (1884); Phoroneuma carpenteri Schulze, 1887, reported by Schulze (1887); and Geodia neptuni (Sollas, 1886) [= Geodia vosmaeri (Sollas, 1886)] and Thenea fenestrata (Schmidt, 1880), reported by Sollas (1888). Further studies reporting on sponges of the north-eastern Brazilian coast were those of de Laubenfels (1956; without descriptions), Johnson (1971; essentially based on beach worn material), Boury-Esnault (1973), Hechtel (1976; without descriptions, 1983) and Sarmento and Correia (2002; without descriptions), among others. The high diversity of sponges on the Brazilian north-eastern coast has been best illustrated by Boury-Esnault (1973), Muricy and Moraes (1998) and Muricy et al. (2006), and of north-eastern Brazilian oceanic islands by Mothes and Bastian (1993) and Moraes et al. (2006). Sarmento and Correia (2002) reported the finding of 17 species of demosponges on Ponta Verde coral reef (Maceió, AL), and correlated these to different habitat types. The present study reports on sponge assemblages found in four shallow urban reef areas of Maceió (Alagoas State, north-eastern Brazil).

Materials and methods

Four sampling areas were chosen: (1) Pajuçara reef (9°41′00.27″S / 35°43′19.78″W; Fig. 1A, 2A), (2) Piscina dos Amores (9°40′09.24″S / 35°42′14.16″W; Fig. 1B, 2B), (3) Ponta Verde (9°39′56.87″S / 35°41′44.98″W; Fig. 1C, 2C) and (4) Jatiúca reef (9°39′15.46″S / 35°41′50.05″W; Fig. 1D, 2D), in a SW - NE sequence. Distances were 2300 m between (1) and (2), 2000 m between (2) and (3) and 1200 m between (3) and (4). Collections were made in the years 2004 and 2005 by wading at low tide and snorkelling. Live specimens were observed underwater, and whenever possible photographed. Each specimen was individually
Results and discussion

A total of twenty-nine sponge species were identified (Table 1), comprising ten orders and nineteen families. The Haplosclerida, with seven species, was the richest order, followed by the Hadromerida, with six, and the Poecilosclerida, with five.

The numbers of species found in each station varied from 16 in the Piscina dos Amores to 24 at Ponta Verde reef. This difference is likely to reflect the more extensive sampling at Ponta Verde, an easily accessible reef, coupled with its possession of a large sciaphilic and slightly eutrophic environment, where sponges constitute the dominant benthic taxon. *Amphimedon viridis* (Fig. 2E) was the sole species observed to be very common on all four sampled areas, thus confirming once more its abundance along the Brazilian coastline. The species has been previously reported as common along the south-eastern Brazilian coast (Muricy et al. 1991, Hajdu et al. 1999). *Cinachyrella alloclada* (Fig. 2F) was very common on three areas, and *Chondrilla aff. nucula*, *Cliona aff. celata*, *C. varians*, *Haliclona manglaris* (Fig. 2H), *H. melana*, *Tedania ignis* (Fig. 2G) and *Tethya sp.* on two stations only. Of these, all but *H. manglaris* were previously known to be common on distinct sectors of the Brazilian coastline (Muricy et al. 1991, Klautau et al. 1999, Muricy and Ribeiro 1999, Lazoski et al. 2001). *Cinachyrella apion*, *Irotrochota birotulata* and *Spirastrella coccinea* were all rare and each species was found in a single station. *Mycale diversisigmata* is a first record for the southern Atlantic. *Tethya* sp. is probably a new species and needs a formal description.

Twenty-one out of the 28 species found are distributed in the Caribbean area too (e.g. Pulitzer-Finali 1986, van Soest et al. 2007), which indicates a marked Tropical western Atlantic affinity of the Maceió reefs’ sponge fauna. Only three species found are provisional Brazilian endemics, viz. *Echinodictyum dendroides*, *Biemna microacanthostigma* and the likely new species of *Tethya*. Four species have widespread disjunct distributions and entitle for a morphogenetic revision study (*Chondrilla aff. nucula*, *Chondrosia collectrix*, *Cliona aff. celata*, *Placosphongia aff. melobesioides*).

Only 12 species reported here were listed for the neighbouring state of Pernambuco by Muricy and Moraes (1998), viz. *Agelas dispar*, *Amphimedon viridis*, *Chondrilla aff. nucula* (as *Chodrilla nucula*), *Chondrosia collectrix*, *Cliona varians* (as *Anthosigmella varians*), *Dragmacidon reticulatum* (as *Pseudaxinella reticulata*), *Geodia corticostylifera*, *Geodia papyracea*, *Ircinia strobilina*, *Scopalina ruetzleri*, *Spirastrella coccinea* and *Tedania ignis*. The similarity has not been found to be higher, probably because the reef strata sampled were...
different. Muricy and Moraes (1998) focused mainly on the subtidal, while the data presented here were gathered in the intertidal. No sponge species has been hitherto recorded from the coast of Sergipe State, the adjacent state on the south, which is a clear sampling gap. On the other hand, most of the species reported upon here also occur on Brazilian oceanic islands, as well as in the State of Bahia, further south (Moraes et al. 2006, Peixinho et al. unpubl. res.).

These results, albeit preliminary, indicate the occurrence of a moderately rich demosponge assemblage in the Maceió
intertidal coral reef areas. The new records found on these shallow urban reefs demonstrate the lack of comprehensive faunistic and taxonomic surveys of the benthic fauna of Alagoas coral reefs.

Maceió has a population quickly approaching 10⁶ citizens. Findings presented here advise for stricter control on human impact on these shallow water urban reefs, some of which are usually visited at low tide by hundreds of people (local collectors of sea-food and tourists). The collected data increase significantly the knowledge concerning the sponge richness of Alagoas state coral reefs.

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**References**


