

NEW REPORT OF THE SPECIES *Asteroporpa (Asteroporpa) annulata* ÖRSTED & LÜTKEN IN: LÜTKEN, 1856 (ECHINODERMATA, OPHIUROIDEA, GORGONOCEPHALIDAE) FROM CEARÁ STATE, BRAZIL

Nova ocorrência da espécie *Asteroporpa (Asteroporpa) annulata* Örsted & Lütken In: Lütken, 1856 (Echinodermata, Ophiuroidea, Gorgonocephalidae) para o Estado do Ceará, Brasil

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ABSTRACT

Ophiuroids of the family Gorgonocephalidae are rare on the Brazilian coast. Thus, only one specimen of Asteroporpa (Asteroporpa) annulata had previously been registered and deposited in a Brazilian scientific collection. In this paper, we report the occurrence of the species in Brazil based on a single specimen captured in a bottom trawl during the MAR 15 Project of the research vessel (RV) Victor Hensen in November 1990. Our report supports the occurrence of the species in Brazil, represents the first report for the state of Ceará, and reduces the gap in the known distribution of the species.

Keywords: Coast of Ceará; Mar 15 Project; RV. Victor Hensen; Ophiuroid.

RESUMO

Ophiuroides da família Gorgonocephalidae são pouco encontrados no litoral brasileiro. Dentre essas a espécie *Asteroporpa (Asteroporpa) annulata* é representada por apenas um único exemplar que se encontra depositado em coleção científica. Dessa forma o presente trabalho tem como objetivo incluir um novo registro dessa espécie para o Brasil. Um único indivíduo dessa espécie foi obtido em novembro de 1990 a partir de uma amostra da

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expedição científica MAR XV realizada pelo Navio Oceanográfico alemão Victor Hensen. Esse achado sustenta a presença dessa espécie para o Brasil, representa um novo registro para o estado do Ceará e diminui a lacuna na distribuição conhecida dessa espécie.

Palavras-chave: Costa do Ceará, Expedição Mar XV; Navio Oceanográfico Victor Hensen; Ofiuróide.

INTRODUCTION

Until 2012, only five species of Gorgonocephalidae had been reported from Brazilian coastal waters. In alphabetical order, the species were: *Astrochele lymani*, *Astrocyclus caecilia*, *Astrogomphus vallatus*, *Astrophyton muricatum* and *Gorgonocephalus chilensis* (Tommasi, 1999; Barboza & Borges, 2012).

That same year Gondim and coworkers registered the occurrence of *Asteroporpa* (*Asteroporpa*) *annulata* based on a single individual collected on the continental shelf off the state of Rio Grande do Norte, Northeastern Brazil (Gondim *et al.*, 2012). Prior to this report, the only species registered off Northeastern Brazil was *Astrophyton muricatum* (Lima-Verde, 1969; Magalhães *et al.*, 2005).

In a book by Hendler (*et al.*, 1995), *Asteroporpa* (*Asteroporpa*) *annulata* is described as occurring from North Carolina to the coast of Brazil, including the Gulf of Mexico and the Caribbean Sea. However, until 2012 no actual report or catalogued specimen from Brazil existed to support this claim (Barboza & Borges, 2012; Gondim *et al.*, 2012).

The purpose of the present paper was to make a new report of the species *Asteroporpa* (*Asteroporpa*) *annulata* from Ceará State, Brazil.

MATERIALS AND METHODS

The specimen examined was collected during the MAR 15 Project of the German research vessel (RV) Victor Hensen covering the coastal waters off Pará, Maranhão, Piauí and Ceará in the period October 1990 to March 1991. Both geological and biological samples were taken by bottom trawling or dredging on the continental shelf and slope at varying depths (mostly 40-200 m).

Trawl sample No. 108 contained a single specimen of *Asteroporpa* (*Asteroporpa*) *annulata*. The sampling site was approximately 70 km off the coast of Ceará on the verge of the continental slope (02°28.9'S; 39°20.8'W), at a depth of 112 m.

The specimen was fixated and preserved in 70% alcohol and deposited in the echinoderm collection of Laboratório de Invertebrados Marinhos do Ceará (LIMCe) of the Department of Biology of Universidade Federal do Ceará (UFC/Campus do Pici).

The whole animal was examined under a stereoscopic microscope (Leica M60) while specific anatomic features were observed under an optical microscope (Olympus CH30) using semi permanent slides. Photographs were taken with a digital camera (Sony DSLR-A330) fitted with a 18-55 mm f/3.5-5.6 lens or a digital camera (Sony Cyber-Shot DSC WX30) coupled to the microscope.

The disk diameter was measured with a digital caliper. The length of the arms was determined with a nylon string measured subsequently.

The species was identified based on Clark (1948) and Hendler (*et al.*, 1995), taking into account the original descriptions by Lütken (1856; 1859) and the revised and updated description by Gondim (*et al.*, 2012).

RESULTS

Classification

Phylum Echinodermata
Class Ophiuroidea Gray, 1840
Order Euryalida Lamarck, 1816
Family Gorgonocephalidae Ljungman, 1867
Genus *Asteroporpa* Örsted & Lütken In: Lütken, 1856

Asteroporpa (Asteroporpa) annulata Örsted & Lütken In: Lütken, 1856
Figure (1 A-D)

Asteroporpa annulata: Örsted & Lütken In: Lütken, 1856: 17.

Asteroporpa annulata: Lütken, 1859: 254, Plate (Tab.) V, Figure 4 a-d.

Asteroporpa annulata: Hendler *et al.*, 1995: 100, Figure 35.

Asteroporpa (Asteroporpa) annulata: Gondim *et al.*, 2012: 142, Figure 1 A-H.

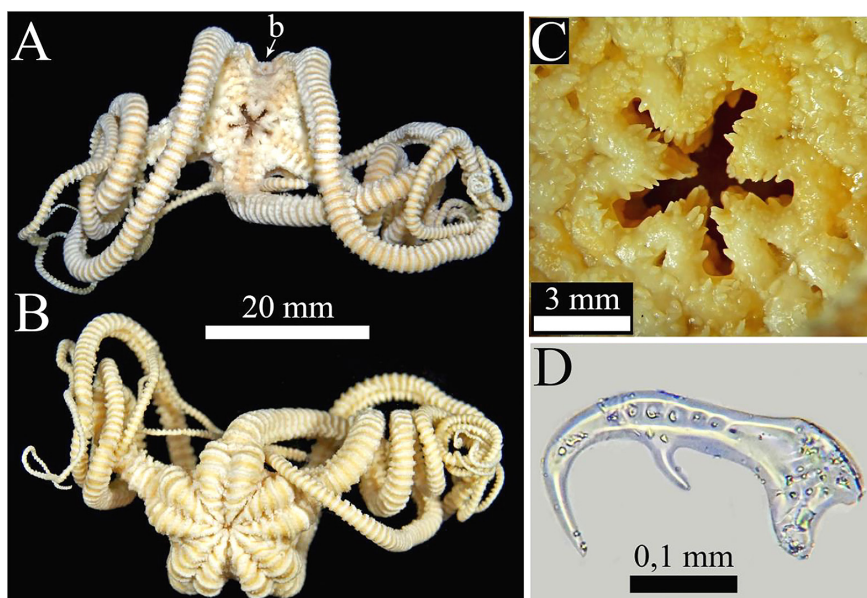


Figura 1 - A-D, morphological aspects of *Asteroporpa (Asteroporpa) annulata* Örsted & Lütken In: Lütken, 1856; A, oral view of body; b=genital slit (or bursae); B, aboral view of body; C, mouth and jaws; D, microscopic hooklet removed from the brachial plate.

Specimen Examined

Echinoderm collection of Laboratório de Invertebrados Marinhos do Ceará (LIMCe) of the Department of Biology of Universidade Federal do Ceará (UFC/Campus do Pici). One specimen. Entry number #51. Site of collection: Approximately 70 km off the state of Ceará (02°28.9'S, 39°20.8'W). Depth: 112 m. Collector: MAR 15 Project, RV Victor Hensen. Trawl sample No. 108. Date: 15 November 1990.

Description

The pentagonal disk measures 20.65 mm in diameter (Figures 1 A and B). The junction between the disk and the arms is poorly demarcated. The skin on the aboral surface is thick and covers the large radial shields, forming a hump-like protuberance, which covers a significant part of the disk area. Rows of raised granules adorn the top of the radial shields, and the center of the disk is covered with flattened granules. Genital slits (or bursae) measuring just over 1 mm in length on the average are visible laterally to the disk, taking up the space between each arm almost entirely (Figure 1A). The jaws and the oral surface are studded with flattened dermal ossicles (Figure 1C). Instead of dental or oral papillae, the species has long and sharp cone-shaped dermal ossicles. The teeth are spiniform and set in two or three rows on each side. The arms are annulated, especially aborally and laterally, and measure 15.50 mm on the average (range: 11.00-18.50). Each ring features rows of inflated plates bearing microscopic hooklets with two curved teeth each (Figure 1D). Several flattened dermal ossicles are seen between the inflated plates. Small blunt spines project from the oral surface towards the lateral aspect of the arms in apparent continuity with the inflated plates, numbering 3-6 on each side of the brachial segment and decreasing in number distally. Slightly larger than the plates, the spines are of similar size and possess small translucent hyaline denticles at the end of the arm.

Distribution

Asteroporpa (Asteroporpa) annulata occurs at depths between 30 m and 300 m off North Carolina, the Bermudas and the Bahamas, in the Gulf of Mexico and the Caribbean, and off the coast of Brazil, at least as far south as Ceará and Rio Grande do Norte (McClintock *et al.*, 1993; Hendler *et al.*, 1995; Benavides-Serrato *et al.*, 2005; Gondim *et al.*, 2012; and the present study).

DISCUSSION

A little over one hundred samplings were carried out by the MAR 15 Project along the Brazilian coast. Approximately forty of these were exclusively biological or included biological material mixed with the collected sediments. Nevertheless, only one specimen of *Asteroporpa (Asteroporpa) annulata* was found.

The specimen described in this report was not associated with any sessile organism, despite the common occurrence of gorgonians, sponges and similar organisms among the samples collected during the MAR 15 Project, but the ophiuroid may have been detached from a larger structure during trawling.

The report by Gondim (*et al.*, 2012) was also based on a single individual, collected with line and hook by a fisherman, a rather unusual way. Both specimens reported from Brazil were found on the Northeastern continental shelf at a depth of about 100 m.

Likewise, the specimens of *Asteroporpa (Asteroporpa) annulata* examined by McClintock (*et al.*, 1993) were collected at an average depth of 90 m. Between 1988 and 1991, the authors captured 177 specimens in nineteen 30-min samplings using a trawl net measuring 10 m across (~9 specimens per sampling).

Asteroporpa (Asteroporpa) annulata is known to prefer depths greater than 30 m (McClintock *et al.*, 1993; Hendler *et al.*, 1995; Benavides-Serrato *et al.*, 2005). The species is likely distributed in clusters coinciding with patches of the sessile organisms with which they associate, such as coral, gorgonians and crinoids (Hendler *et al.*, 1995; Gondim *et al.*,

2012). This would account for the relative scarcity of reports and the difficulty of capture (Gondim *et al.*, 2012).

Our specimen represents a new occurrence of *A. (A.) annulata* for the state of Ceará, thus reducing the gap in the distribution of the species between the Caribbean and Northeastern Brazil.

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