New records of two species of *Acanthocarpus* Stimpson, 1871 (Crustacea: Decapoda: Calappidae) in northeastern Brazil

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Novos registros de duas espécies de *Acanthocarpus* Stimpson, 1871 (Crustácea: Decapoda: Calappidae) no nordeste do Brasil

Resumo: O caranguejo do gênero *Acanthocarpus* Stimpson, 1871 tem hábitos bentônicos, ocorrendo na plataforma continental em substratos de cascalhos ou lamosos com ocorrência em todos os oceanos, especialmente entre 20-522 m de profundidade. Neste trabalho, nós reportamos a ocorrência de *Acanthocarpus alexandri* Stimpson, 1871 e *A. bispinosus* A. Milne-Edwards, 1880 para a Bacia Potiguar (Rio Grande do Norte), localizada na região nordeste do Brasil e aumentamos o conhecimento sobre aspectos distribucionais das espécies para a costa brasileira.

Palavras chave: Bacia Potiguar, registros adicionais, distribuição geográfica, caranguejos braquiúros, plataforma continental.

Abstract: The gladiator box crab of the genus *Acanthocarpus* Stimpson, 1871 has benthonic habits, occurring in continental shelf on gravel or muddy substrates with occurrence in all oceans, especially between 20-522 m depth. In this paper we report the occurrence of *Acanthocarpus alexandri* Stimpson, 1871 and *A. bispinosus* A. Milne-Edwards, 1880 for the Potiguar Basin (Rio Grande do Norte), located in the Brazilian northeast and increase the knowledge about the distributional aspects of this species from Brazilian coast.

Key words: Potiguar Basin, further records, geographic distribution, brachyuran crabs, continental shelf.

Introduction

The family Calappidae De Haan, 1833 is composed by 9 genera, with individuals occurring in all oceans, especially in continental shelf on muddy or gravel substrates, may be found under shells and rocks in coastal zones (Melo 1996; Melo et al. 1998; Ng et al. 2008; Melo 2010). In Brazil, the family is represented by 3 genera: *Acanthocarpus* Stimpson, 1871; *Calappa* Weber, 1795; and *Cycloes* De Haan, 1837 (Melo et al. 1998; Ramos-Porto et al. 2002; Rodrigues & Young 2003).

The genus *Acanthocarpus* contains five species: *Acanthocarpus alexandri* Stimpson, 1871; *Acanthocarpus bispinosus* A. Milne-Edwards, 1880; *Acanthocarpus brevispinis* Monod,
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1946; Acanthocarpus delsolari Garth, 1973 and Acanthocarpus meridionalis Mané-Garzon, 1980, but only two species (A. alexandri and A. bispinosus) have been recorded from Brazilian waters by Melo (1996), Abreu et al. (2002), Ramos-Porto et al. (2002), Rodrigues & Young (2003), Coelho et al. (2008) and Melo (2010). Thus, in this paper, we report the occurrence of Acanthocarpus alexandri and A. bispinosus from Potiguar Basin, located in the Brazilian northeast and increase the distributional knowledge of these species in Brazil.

Material and Methods

The samples were carried out in the Potiguar Basin, located in the northeast region of Brazil, between the states of Ceará (CE) and Rio Grande do Norte (RN), under the framework of the project “Avaliação da Biota Bentônica e Planctônica da Bacia Potiguar e Ceará (Bpot)”, developed by the Brazilian Oil Company “Petróleo Brasileiro S/A (Petrobras)”, on board of the R/V Luke Thomas in December 2009 with stations “Arrasto Malha Talude (#AR)” and R/V Seward Johnson in May 2011, referred as “Malha Talude (#MT)”. The specimens were collected through of the bottom trawls along the continental slope, using a semi-balloon otter trawl net with 50 mm mesh size and 18 m of mouth opening, between 150–2068 m depth.

After the sampling, the specimens were preserved in ethanol 70% and in the laboratory, the individuals were identified based on Rathbun (1937), Williams (1984) and Melo (1996). The carapace length (CL) and carapace width (CW) were measured using a digital caliper (0.01 mm). The specimens collected in Potiguar Basin were deposited in the Carcinological Collection of the "Museu de Oceanografia Prof. Petrônio Alves Coelho (MOUFPE)”, in the “Universidade Federal de Pernambuco“, Recife, Pernambuco, Brazil.

Results and Discussion

Systematic

Calappidae De Haan, 1833
Acanthocarpus Stimpson, 1871
Acanthocarpus alexandri Stimpson, 1871
(Figure 1)

Material examined: 2 ♂ (CL: 310 mm, 330 mm; CW: 280 mm, 310 mm), Potiguar Basin (Rio Grande do Norte) #MT #AR 55, 04°44′ S, 036°25′ W, 180 m depth, bottom temperature 28.8° C, 08.XII.2009, MOUFPE 18768.

Diagnosis: Carapace ovate, regularly convex with a short posterolateral spine. Surface of carapace covered with minute granules and punctae. Posterior margin arcuate, bearing a prominent tooth at middle and a slight wave in the outline on each side. Posterolateral margin not tuberculate. The spine at outer angle of merus longer than half the width of carapace; the superior spine is one-fourth to one-third as long as the inferior. Ambulatory legs naked, unarmed, with smooth polished surface (modified from Rathbun 1937).

Geographic distribution: Western Atlantic: Canada, United States (Massachusetts, North Carolina to Florida), Gulf of Mexico, Cuba, Porto Rico, Lesser Antilles, Dry Tortugas, and Brazil (Piauí, Rio Grande do Norte [present study], Bahia, Espírito Santo, Rio de Janeiro and Rio Grande do Sul) (Melo 1996; Abreu et al. 2002; Ramos-Porto et al. 2002; Rodrigues & Young 2003; Coelho et al. 2008; Melo 2010) (Figure 3).

Bathymetric distribution: Acanthocarpus alexandri was collected at 180 m depth, which is within the known depth range of the species (20-480 m) of previously recorded by Ramos-Porto et al. (2002) and Rodrigues & Young (2003).
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Comments: Acanthocarpus alexandri occurs exclusively in the continental shelf on gravel or mud substrates, with records in coastal zone around 20 m (Rodrigues & Young 2003; Melo 2010; Mullowney et al. 2011). According to Melo (1996, 2010) and Haefner (1981), the species can be carnivore opportunist feeding on organisms of the infauna. Acanthocarpus alexandri was first recorded from the Brazilian northeast in the States of Piauí and Bahia by Ramos-Porto et al. (2002), since then there have been no further records of the species in the region. Thus, the material from Potiguar Basin (Rio Grande do Norte) represents the second record of the species in the Brazilian northeast and diminishes the distribution gap of the species in the Brazilian coast (Figure 3).

Figure 1. Acanthocarpus alexandri Stimpson, 1871, male, Rio Grande do Norte, Potiguar Basin #AR 55, 180 m depth, MOUFPE 18768. Scale bar: 1 cm.
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Acanthocarpus bispinosus A. Milne-Edwards, 1880
(Figure 2)

Material examined: 3 ♂ (CL: 550 mm, 490 mm, 520 mm; CW: 480 mm, 420 mm, 470 mm), Potiguar Basin (Rio Grande do Norte) #MT 63, 04°36’ S, 36°45’ W, 400 m depth, bottom temperature 34.6° C, 13.V.2011, MOUFPE18766. 2 ♀ (CL: 420 mm, 410 mm; CW: 380 mm, 340 mm), Potiguar Basin (Rio Grande do Norte) #MT 65, 04°33’ S, 36°52’ W, 400 m depth, bottom temperature 34.7° C, 13.V.2011, MOUFPE 18767.

Figure 2. Acanthocarpus bispinosus A. Milne-Edwards, 1880, male, Rio Grande do Norte, Potiguar Basin #MT 63, 400 m depth, MOUFPE 18766. Scale bar: 1 cm.
**Acanthocarpus from northeastern Brazil**

**Diagnosis:** Carapace circular, strong granulate with a long lateral spine. Surface of carapace covered of coarsely granulated. Posterior margin less produced on median line. Posterolateral margin tuberculate. No tooth on posterior margin and no conical tubercle on sternal plastron. Chelipeds showing merus with long spine; coarsely granulate, outer crest not prominent; striate of stridulating ridge about 60 points. Ambulatory legs finely granulated, especially in ventral margin (modified from Rathbun 1937).

**Geographic distribution:** Western Atlantic: United States (Florida), Gulf of Mexico, Lesser Antilles, Grenadines Island, Dry Tortugas, Brazil (Rio Grande do Norte [present study], Pernambuco, Sergipe, Bahia) (Powers 1977; Abreu et al. 2002; Ramos-Porto et al. 2002; Rodrigues & Young 2003; Serejo et al. 2007) (Figure 3).

**Bathymetric distribution:** *Acanthocarpus bispinosus* was collected at 400 m depth, which is within the known depth range of the species (200-522 m) of previously recorded by Ramos-Porto et al. (2002) and Rodrigues & Young (2003).

**Comments:** *Acanthocarpus bispinosus* occurs on gravel or muddy substrates in the continental shelf, but can also be found under rocks, corals and shells. In Brazil, the species has been reported only from the northeast region in the states of Pernambuco, Sergipe and Bahia (Abreu et al. 2002; Ramos-Porto et al. 2002; Rodrigues & Young 2003). The material from Potiguar Basin (Rio Grande do Norte) constitutes the new northernmost record of the species in the country, increasing the distribution of the species by 4° degrees of latitude from Pernambuco.

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**Figure 3.** Geographic distribution of *Acanthocarpus alexandri* Stimpson, 1871 and *A. bispinosus* A. Milne-Edwards, 1880 in Brazilian waters. Black symbols: previous records. Gray symbols: new records.
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