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Further records of *Eurythenes obesus* (Chevreux, 1905) (Crustacea: Amphipoda: Eurytheneidae) from Brazilian deep waters

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ABSTRACT

The family Eurytheneidae Stoddart & Lowry, 2004 is monotypic, including only the genus *Eurythenes* Smith, 1882, which is composed by Meso- and benthopelagic amphipods, with large vertical distribution in water column and can be reach depths of 5000 m, especially in muddy bottoms, in association with the great offer of organic matter in deep environments. *Eurythenes* is represented by nine species, with a cosmopolitan distribution, occurring in all oceans and covering high latitudes. However, in Atlantic Ocean, only five species are reported: *Eurythenes obesus* (Chevreux, 1905), *E. magellanicus* (H. Milne Edwards, 1848) as [= *E. gryllus* (Lichtenstein in Mandt, 1822)], *E. maldoror* d'Udekem d'Acoz & Havermans, 2015, *E. sigmiferus* d'Udekem d'Acoz & Havermans, 2015 and *E. thurstoni* Stoddart & Lowry, 2004, being the *E. obesus* reported only from the States of Rio de Janeiro and Bahia in Brazilian waters. In this study, we recorded the presence of *E. obesus* in Northeast of Brazil at seamounts (Fernando de Noronha Chain – off Rocas Atoll) and off the state of Rio Grande do Norte. This record brings a new observation of *E. obesus* from Brazil and increases knowledge on the deep crustaceans from the northeastern Brazil.

Keywords: Deep-sea; Brazil; Meso and Bathypelagic amphipod; New Records; Seamounts.

Registros adicionais de *Eurythenes obesus* (Chevreux, 1905) (Crustácea: Anfipoda: Eurytheneidae) para águas profundas Brasileiras

RESUMO

A família Eurytheneidae Stoddart & Lowry, 2004 é monotípica, incluindo apenas o gênero *Eurythenes* Smith, 1882, o qual é composto por anfípodas Meso e Batipelágicos, com larga distribuição vertical na coluna da água e podendo alcançar profundidades de 5000 m, especialmente em fundos lamosos, em associação com a grande oferta de matéria orgânica em ambientes profundos. *Eurythenes* é representada por nove espécies, com distribuição cosmopolita, ocorrendo em todos os oceanos e cobrindo altas latitudes. Contudo, no oceano Atlântico, apenas cinco espécies são reportadas: *Eurythenes obesus* (Chevreux, 1905), *E. magellanicus* (H. Milne Edwards, 1848) como [= *E. gryllus* (Lichtenstein in Mandt, 1822)], *E. maldoror* d'Udekem d'Acoz & Havermans, 2015, *E. sigmiferus* d'Udekem d'Acoz & Havermans, 2015 e *E. thurstoni* Stoddart & Lowry, 2004, sendo o *E. obesus* reportado apenas para os Estados do Rio de Janeiro e Bahia em águas Brasileiras. Neste estudo, nos registramos a presença de *E. obesus* para os montes submarinos (Cadeia de Fernando de Noronha- fora do Atol das Rocas) e ao largo do Rio Grande do Norte, ambas localizadas no nordeste do Brasil. Esse registro trás uma nova observação do *E. obesus* para o Brasil e aumenta o conhecimento sobre crustáceos profundos para o nordeste do Brasil.

Palavras-chaves: Mar profundo, Brasil, Anfípodas meso e Batipelágicos, Novo registro, Montes submarinos.

In the deep habitats the biodiversity is characterized especially by vertebrates and invertebrates presenting different food habits such as carnivorous, decomposers, necrophagous and scavenging of organic matters (HARGRAVE, 1985; DAUBY et al., 2001). The two last cases apply to several species of invertebrates including isopods and amphipods crustaceans, especially the families Cirolanidae Dana, 1852 (e.g. *Bathynomus* A. Milne-Edwards, 1879) and Eurytheneidae Stoddart & Lowry, 2004 (e.g. *Eurythenes* Smith, 1882) (see HARGRAVE et al., 1995; d'UDEKEM d'ACOZ; HAVERMANS, 2015).

The scavenging amphipods of the genus *Eurythenes* are responsible for the rapid decomposition of dead animals and organic matters in deep environments (HARGRAVE, 1985; HARGRAVE et al., 1995; SENNA, 2009), covering a total of nine species with a broad distribution in all oceans, especially in water column and bottoms of muddy substrates (HARGRAVE, 1985; d'UDEKEM d'ACOZ; HAVERMANS, 2015; WESTON et al., 2020). In the Atlantic Ocean, only five species were recorded: *E obesus* (Chevreux, 1905), *E. magellanicus* (H. Milne Edwards, 1848) as [= *E. gryllus* (Lichtenstein in Mandt, 1822)], *E. maldoror* d'Udekem d'Acoz & Havermans, 2015, *E. sigmiferus* d'Udekem d'Acoz & Havermans, 2015 and *E. thurstoni* Stoddart & Lowry, 2004, with four of them being reported in Brazilian waters (except *E. maldoror*) (SEREJO et al., 2007; SENNA; SEREJO, 2008; SENNA, 2009; d'UDEKEM d'ACOZ; HAVERMANS, 2015; SEREJO; SIQUEIRA, 2018).

The meso and bathypelagic amphipod *E. obesus* (Chevreux, 1905) presents a cosmopolitan distribution, occurring in all oceans and covers a high range of latitudes. It distributes at depth down to 5000 m, especially in muddy bottoms associated with the great offer of organic matter in deep areas. In Brazilian waters, this species has only been recorded from the States of Bahia and Rio de Janeiro (SEREJO et al., 2007; SENNA; SEREJO, 2008; SENNA, 2009). Here, we report the first occurrence of *E. obesus* in Northeast of Brazil (Fernando de Noronha Chain – off Rocas Atoll and off Rio Grande Norte).

The specimens of *E. obesus* were collected during the *Abraços 2* (*Acoustic Along the Brazilian Coast 2*) survey (Bertrand, 2017), covering the Northeast Brazil between the states of Alagoas and Rio Grande do Norte and encompassing the Fernando de Noronha Archipelago, Rocas Atoll and Fernando de Noronha Chain, in April 2017. The sampling was performed by using a micronekton trawl

net with 1 mm of mesh, at depth ranging between 10 and 1160 m. After the campaign, the specimens were sorted out, photographed, measured with a digital caliper (0.01 mm) in total length (TL) and preserved in formalin 4% and thereafter identified to species level according to Senna (2009) and deposited in Museum of Oceanography Prof. Petrônio Alves Coelho of the Federal University of Pernambuco, Recife, Brazil (MOUFPE).

Ware examined 3 females (Figure 1) Station (ST#) 52A/ leg. 2 (984 m), collected in oceanic province, Fernando de Noronha Chain – off Rocas Atoll (03° 43.26' S/ 033° 25.15' W) (MOUFPE 19698) and 1 female ST#49A/ leg. 2 (1020 m), collected off Rio Grande Norte (04° 17' S, 34° 26' W) (MOUFPE 19697) both stations indicated in Figure 2. In our specimens, were observed in two individuals (station 52A/ leg. 2) some morphological variations in structures as: Pereopods 3, 5, 6 and telson all of them showing asymmetry, being in this case, the proportion of the propodus and dactylus characteristic in the differentiation between species (see key in d'UDEKEM d'ACOZ; HAVERMANS, 2015). These asymmetries can be associated with nutritional or genetic alterations during the ecdysis in some appendages as observed in others deep crustaceans (see MELO et al., 2014; ALVES-JÚNIOR et al., 2018; CAMPELO et al., 2018). These new records increase the distribution of *E. obesus* and reporting that the species can be distributed more widely than the documented in Brazilian deep waters.

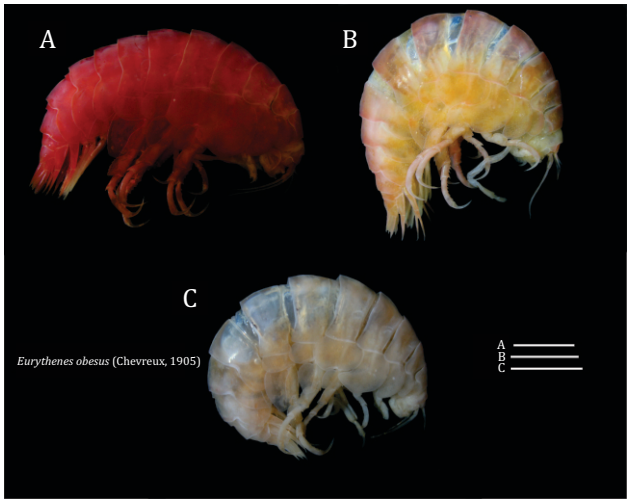

Figure 1. *Eurythenes obesus* (Chevreux, 1905), females collected in Fernando de Noronha Chain - station ST# 52A/ leg. 2 at 984 m: A-C. Original specimen's coloration, indicating the color variation in lateral view. Scale bar: 1 cm. / **Figura 1**. *Eurythenes obesus* (Chevreux, 1905), fêmeas coletadas em cadeira Fernando de Noronha - estação ST# 52A/ leg. 2 em 984 m: A-C. Coloração original dos espécimes, indicando a variação de cor na visão lateral. Escala da barra: 1 cm.

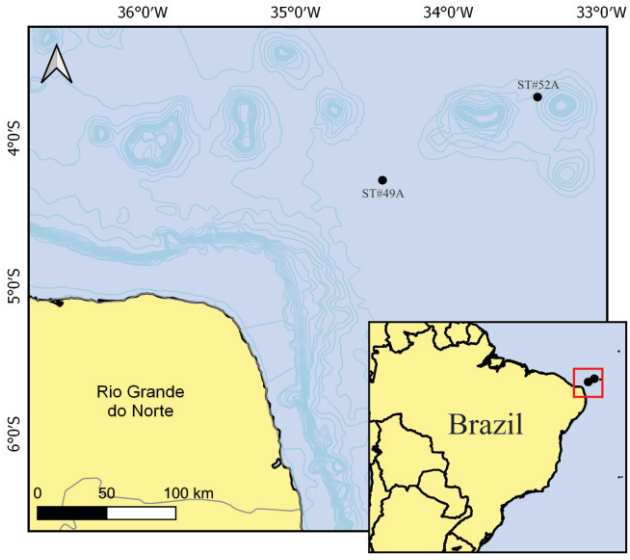

Figure 2. Map of occurrence of *Eurythenes obesus* (Chevreux, 1905), indicating the sampled point on the Off Rio Grande do Norte (ST# 49A) and Fernando de Noronha Chain (ST#52A), under the *Abraços 2* project, with surveys performed in northeastern Brazil. / **Figura 2**. Mapa de ocorrência do *Eurythenes obesus* (Chevreux, 1905), indicando os pontos de coleta na região fora do Rio Grande do Norte (ST# 49A) e cadeia Fernando de Noronha (ST#52A), sob o projeto *Abraços 2*, com campanhas realizadas no nordeste do Brasil.

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