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***Cheirimedon foscae* sp. nov. (Amphipoda: Lysianassidae: Tryphosinae) from the deep sea Campos Basin, Southwestern Atlantic Ocean**

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Abstract

A new species of lysianassid amphipod belonging to the genus *Cheirimedon* was collected on the continental slope of the Campos Basin, the largest oil reserve in Brazilian waters. This is the first record of the genus *Cheirimedon* from the Atlantic Ocean, which was previously restricted to the Antarctic and Tasmanian sea. The new species is fully illustrated and compared with related species. Additionally, a world key to the *Cheirimedon* species is provided.

Key words: Lysianassidae, *Cheirimedon*, new species, taxonomy, deep sea, Campos Basin, Brazil

Introduction

The Crustacea knowledge has been growing in the past 15 years along the Brazilian coast, mainly as a result of taxonomic efforts in studying material from large projects with focus in characterizing the marine environment as the REVIZEE program (Evaluation of the Sustainable Potential of Living Resources in Exclusive Economic Zone) (Serejo *et al.* 2006, 2007a, b); Project OCEANPROF (Campos Basin Deep Sea Environmental Project) (Serejo & Cardoso 2010, Serejo *et al.* 2010) and Project HABITATS (Evaluation of Environmental Heterogeneity in Deep Sea Campos Basin). Consequently, a high number of amphipod samples from the continental shelf and the slope of the Brazilian coast have been worked out in a taxonomy perspective. Currently there are 17 known lysianassoid species registered for the Brazilian coast (Senna 2007, 2009; Senna & Serejo 2007, 2008a, b; Senna & Souza-Filho 2010; Sorrentino *et al.* 2014).

The status of Lysianassoidea Dana, 1849 as a superfamily was not recognized by Barnard & Karaman (1991), who considered the group as a single family Lysianassidae Dana, 1849, which was characterized by peduncle of antenna 1 short and stout and gnathopod 2 with long article 3 and propodus typically mitten shaped. Nowadays it is a consensus that the Lysianassoidea is a large group with 22 established families and 3 subfamilies with approximately 1400 species (Horton & De Broyer 2013). Among the Lysianassidae Dana, 1849 s.s., the subfamily Tryphosinae Lowry & Stoddart, 1997 includes 40 genera with distinct distributions (Lowry 2013). Among these genera, *Cheirimedon* Stebbing, 1888 is characterized by having a gnathopod 1 with a very short and lobate carpus and expanded propodus (Barnard & Karaman 1991). Until the present study, the genus comprised six species, five of them restricted to the Antarctic region: *C. crenatipalmatus* Stebbing, 1888; *C. femoratus* (Pfeffer, 1888); *C. folgneri* Walker, 1903; *C. similis* Thurston, 1974 and *C. solidus* Andres, 1986 (De Broyer *et al.* 2007) and one species, *C. cansada* (Barnard, 1961) is registered to the Tasman Sea (Barnard 1961; Kilgallen 2009). All known species occur within a depth range from 5 to 1800 m.

Cheirimedon foscae sp. nov. was collected in the Campos Basin and represents the first record of the genus in deep sea Southwestern Atlantic Ocean. The Campos Basin extends from the states of Espírito Santo to Rio de Janeiro on the southeastern Brazilian coast. This area has enormous economic importance, as it currently accounts for nearly 80% of Brazil's oil production being the largest oil reserve in Brazilian waters (Lavrado *et al.* 2010). A world key to the *Cheirimedon* species is provided.

World key of *Cheirimedon* species

1. Eyes present 2
- Eyes absent 5
2. Telson cleft about 1/3 its length with one seta on apex of each lobe 3
- Telson cleft about half its length with setae on apex and on surface of each lobe 4
3. Accessory flagellum with 5 articles; coxa 1 wider distally than proximally, uropod 3 with long slender setae on rami
..... *Cheirimedon fougneri* Walker, 1903
- Accessory flagellum with 3 articles; coxa 1 with margins sub-parallel, uropod 3 with long slender serrulate setae on rami
..... *Cheirimedon solidus* Andres, 1986
4. Antenna 1, peduncle first article 1.3x longer than wide; accessory flagellum 5-articulate; telson with two robust setae on medioapical surface
..... *Cheirimedon femoratus* Pfeffer, 1888
- Antenna 1, peduncle first article 2.5x longer than wide; accessory flagellum 6-articulate; telson with row of small setae on medioapical surface
..... *Cheirimedon similis* Thurston, 1974
5. Gnathopod 1 propodus 2 or 2.5x longer than wide, dactylus fitting palm 6
- Gnathopod 1 propodus 1.2x longer than wide, dactylus distinctly longer than palm
..... *Cheirimedon foscae* sp. nov.
6. Gnathopod 1 propodus 2.0x longer than wide; epimeron 3 with well defined tooth
..... *Cheirimedon crenatipalmatus* Stebbing, 1888
- Gnathopod 1 propodus 2.5x longer than wide; epimeron 3 slightly pointed, not forming a defined tooth
..... *Cheirimedon cansada* (Barnard, 1961)

This is the first record of *Cheirimedon* for the Atlantic Ocean. All other species were confined to cold waters of the Antarctic and Tasmania region (De Broyer *et al.* 2007). *Cheirimedon foscae* sp. nov. was collected from deep sea Atlantic with temperatures around 5° C (Toldo & Ayup-Zouain 2009).

The counterclockwise “Subtropical Gyre” is formed by the interconnection of Brazil, Antarctic Circumpolar, Benguela, and South Equatorial Currents, dominating the surface circulation of the southern Atlantic Ocean. Wind-effect and thermohaline processes determine this circulation pattern, which affects subsurface waters as deep as 1.500 m (Schmid *et al.* 2000). The connectivity between Antarctica and South America through the Antarctic Circumpolar Current (ACC) has been discussed in a larger scale with different benthic organisms as nematodes, crustaceans, mollusks, polychaetes and echinoderm (Campos *et al.* 2011). The presence of *Cheirimedon* in deep water Brazilian waters, nearby the ACC route, reinforces this hypothesis.

Etymology: The new species is named in honor of Dra. Fosca P. Leite (Universidade de Campinas, UNICAMP, São Paulo) for her pioneer and important studies on Brazilian amphipod ecology.

Distribution: Campos Basin (20.5–24°S, 40–41°W), Rio de Janeiro, Brazil. Depth: 390–1311 m.

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