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A new species of Stilipedidae (Amphipoda: Senticaudata) from the South Mid-Atlantic Ridge

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Abstract

A new species of *Alexandrella* is herein described based on material from the South Mid-Atlantic Ridge around depths of 4700 m. Samples were collected in the scope of the South MAR ECO (Patterns and Processes of the Ecosystems of the Mid-Atlantic) Project, which was part of the Census of Marine Life (CoML). Until the present study, *Alexandrella* was restricted to Antarctic and Subantarctic waters, with two species having extended distributions (Kermadec Trench, Australia and New Zealand). This is the first record of *Alexandrella* in the deep sea Atlantic, outside the Southern Ocean limits.

Key words: *Alexandrella*, new species, deep sea, Mid-Atlantic Ridge, Census of Marine Life.

Introduction

Oceans of the southern hemisphere have been much less researched and sampled than the northern hemisphere, especially the South Atlantic. The South Atlantic Ocean is the newest of all major oceans, formed by the separation of South America and Africa 175 – 90 million years ago (Levin & Gooday, 2003). Its configuration and size are outcomes of two independent spreading processes: one that formed the North Atlantic in the early Mesozoic nearly 200 million years ago and another that formed the South Atlantic 100 million years later. This latter spreading process resulted in connections with three other oceans—the Southern, Pacific, and Indian (Perez *et al.*, 2012). Despite its size and physical role in the world ocean ecosystem, our information about aquatic organism deep-sea diversity and distribution is scarce and mostly inferred by comparison with the North Atlantic. Actually, deep sea biodiversity as a whole is still underestimated. The fraction of new species to be found in deep-sea areas sampled for the first time ranges from 50 to 100 %, with most of them only being represented by single individuals in the samples (Arbizu & Brix, 2008).

Amphipods are one of the major groups that colonized the deep sea, having planktonic (mainly hyperiids), benthic or benthopelagic species. Stilipedidae is considered as a cold water bipolar submergent family and is often found in bathyal and abyssal depths (Barnard & Karaman, 1991). Holman & Watling (1983) revised the family Stilipedidae that included three subfamilies and five genera as: Astryinae Pirlot, 1934, *Astyra* Boeck, 1871; Alexandrellinae Holman & Watling, 1983, *Alexandrella* Chevreux, 1911, *Astyroides* Birstein & Vinogradov, 1960, *Bathypanoplea* Schellenberg, 1939 and Sitilipedinae Holmes, 1908, *Stilipes* Holmes, 1908. Coleman & Barnard (1991) rediagnosed the Stilipedidae, but did not consider the subfamilies and included only four genera: *Alexandrella*, *Astyroides*, *Bathypanoplea* and *Stilipes*. The genera *Astyra* and *Eclysis* K.H. Barnard, 1932 were treated within Astryidae Pirlot, 1934. Later on, Berge & Vader (2005) suggested that the Stilipedidae and Astryidae should be a monophyletic group, but no formal proposal was done. Until the present study, the genus *Alexandrella* included six species: *Alexandrella australis* (Chilton, 1912); *A. dentata* Chevreux, 1912; *A. inermis* Bellan-Santini & Ledoyer, 1987; *A. mandibulata* Berge & Vader, 2005; *A. martae* Berge & Vader, 2005, and *A. subchelata* Holman & Watling, 1983. All *Alexandrella* species occur in Antarctic and Subantarctic waters, two of them having extended distributions. *Alexandrella dentata* was also found in the Kermadec Trench and *A. subchelata* was found in Australia (Great Australian Bight) and New Zealand. This is the first record of *Alexandrella* in the deep sea connection between the SO and this area at the genus level. The description of this new species will also increase the knowledge of the area and help to build up future biogeography approaches.

Also in the scope of the Census of Marine Life the study of the Antarctic isolation by the APF and its connectivity to other continents is relevant for understanding circulation patterns in the world oceans and atmosphere, and how biological communities have responded to past and present environmental changes (Campos *et al.*, 2011). Part of this connectivity can be accessed by species diversity, which is still much underestimated especially in the deep sea.

Key to the species of *Alexandrella*

(modified from Berge & Vader 2005)

1. Pereonite 7 dorsally with a strong pointed tooth, mandibular incisors smooth . . . . *Alexandrella australis* (Chilton, 1912)
– Pereonite 7 dorsally smooth, mandibular incisors fully or partly toothed 2
2. Gnathopods 1 and 2 subchelate 3
– Gnathopods 1 and 2 simple 4
3. Maxilla 1 outer plate with 26 setal teeth; gnathopods 1–2 lacking facial setae; pleonites 1–2 dorsally with weak ridge, pleonite 3 with low rounded tooth . . . . *Alexandrella subchelata* Holman and Watling, 1983
– Maxilla 1 outer plate with 40–45 setal teeth; gnathopods 1–2 densely setose; pleonites 1–3 dorsally with a well developed pointed tooth . . . . *Alexandrella setosa* sp. nov.
4. Pleonites 1–3 strongly toothed, female pereopod 1 with oostegite. 5
– Pleonites 1–3 weakly toothed, female pereopod 1 without oostegite 6
5. Right mandible with lacinia mobilis reduced to a simple tooth . . . . *Alexandrella mandibulata* Berge & Vader, 2005
– Right mandible with lacinia mobilis broad and toothed, but smaller than left one. . . *Alexandrella martae* Berge & Vader, 2005
6. Mandibular incisors not toothed along the entire margin, antennae subequal . . . . *Alexandrella dentata* Chevreux, 1912
– Mandibular incisors toothed along the entire margin, antenna 1 shorter than antenna 2 . . . . *Alexandrella inermis* Bellan-Santini & Ledoyer, 1986

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