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Description of a new species of *Microcanuella* Mielke, 1994 (Copepoda: Polyarthra: Canuellidae) from the Great Meteor Seamount plateau (subtropical NE Atlantic Ocean), with remarks on the geographical distribution of the genus

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ABSTRACT

The species *Microcanuella secunda* sp. n. (Copepoda, Polyarthra, Canuellidae) is described from the plateau of the Great Meteor Seamount. It can be clearly identified as *Microcanuella* Mielke, due to the following generic autapomorphies: (1) Body size <700 μm; (2) Reduced armature of P4 exp3 and enp3 with only 2 setae; (3) P1 enp3 with at most 4 elements and (4) P1 exp3 with at most 5 elements. As this is the second described species of *Microcanuella*, an extended generic diagnosis is provided. Furthermore, *M. secunda* sp. n. can be separated from *Microcanuella bisetosa* Mielke on the basis of the following apomorphic characters: (A) A1: 3rd segment with 3 long, rat-tailed setae; (B) A2 enp1 with 1 seta; (C) Mxl basis without endites and with 6 setae.

M. bisetosa was found in the Pacific (Punta Morales, Costa Rica), *M. secunda* sp. n. and two closely related but undescribed species in the Atlantic Ocean (Great Meteor Seamount, Seine Seamount, Sedlo Seamount). All species are known from only one locality each, hence each one of them might be endemic. However, as the genus is widely distributed and present on different seamounts, it can be supposed that seamounts act as stepping stones within this genus.

1. Introduction

Meiobenthic organisms are smaller than 1000 μm, stick to the sediment and neither have any planktonic life stages, nor a restricted reproduction and dispersal (Giere, 2009). However, the same meiobenthic species can be found world-wide (Gheerardyn and Veit-Köhler, 2009; Koller and George, 2011; Menzel, 2011; Menzel et al., 2011; Plum and George, 2009; Pointner et al., 2013). Many possible distribution mechanisms have already been discussed, like emergence (Armonies, 1988; Giere, 2009; Palmer, 1988; Thistle, 2003; Thistle and Sedlacek, 2004), erosion (Giere, 2009; Hicks, 1992; Palmer, 1988; Palmer and Gust, 1985) or rafting (Faust and Gulledge, 1996; Giere, 2009; Hicks, 1988; Houle, 1999), as well as geological processes (Giere, 2009; Sterrer, 1973) and structures (Ax and Armonies, 1990; Menzel et al., 2011). However, this problem is still unresolved and has therefore been named the "Meiofauna Paradox" by Giere (2009).

Hubbs (1959) elaborated the hypothesis that seamounts could play a role in species distribution as stepping stone or as a trapping stone, capturing specimens. George and Schminke (2002) referred this hypothesis to meiobenthic organisms. Until now, the harpacticoid copepods have only been studied on a small number of seamounts (George, 2013), among which the Great Meteor Seamount (GMS) is one of the best-studied (George, 2004a,b, 2006; George and Schminke, 2002; Koller and George, 2011; Plum and George, 2009). It can be seen as a trapping stone for Harpacticoida, as most of the species presumably are endemic (George and Schminke, 2002). Up to now, the new species *Microcanuella secunda* sp. n. has only been found on the GMS (March 2010, expedition P397 GroMet German RV "*Poseidon*"; George, 2010), where it is very abundant. This supports the hypothesis of George and Schminke (2002) of a perhaps high number of endemic species on the GMS plateau. Nevertheless, two closely related species have been identified on the Seine and the Sedlo Seamount (Büntzow, 2011). The geographical distribution of the taxon *Microcanuella* Mielke, 1994 is discussed in this paper.

Abbreviations: A1, antennule; A2, antenna; aes, aesthetasc; cphth, cephalothorax; CR, caudal rami; enp, endopod; exp, exopod; GMS, Great Meteor Seamount; md, mandible; mx, maxilla; mxl, maxillule; mxp, maxilliped; P1–P6, pereiopods 1–6.

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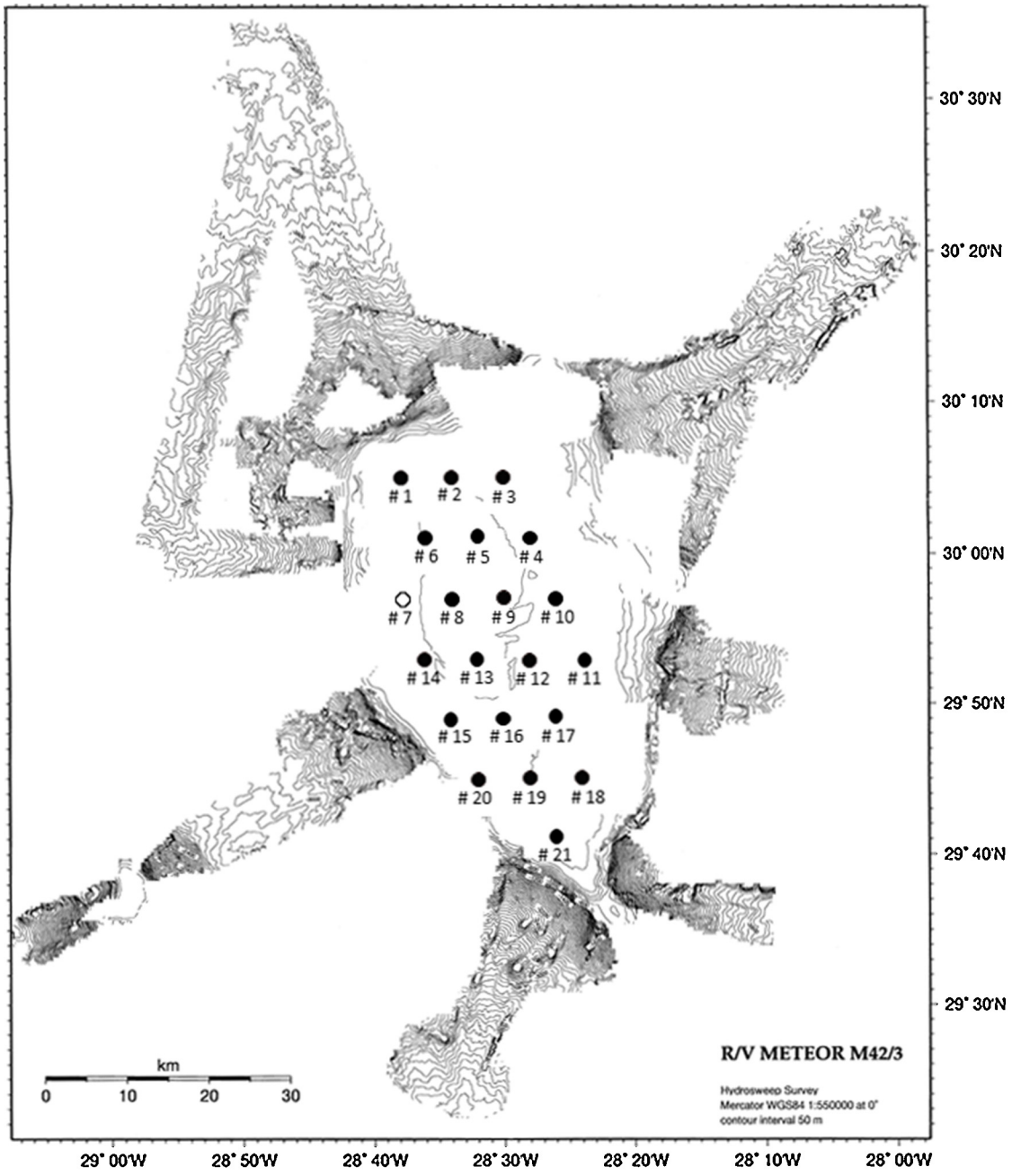

Fig. 1. Sampling locations (–1#–#21) on the plateau of the GMS during the expedition P397 GroMet with the research vessel RV "*Poseidon*" in 2010. Dots indicate all sampling stations, black: *Microcanuella secunda* sp. n. was detected, white: *Microcanuella secunda* sp. n. was not detected until now.

M. secunda sp. n. belongs to the up to now monotypic taxon *Microcanuella*, which was established by Mielke (1994) based on the reduced setal armature of P1, P4 and P5. As two additional species have been identified, *Microcanuella* is no longer monotypic and the generic diagnosis is therefore extended on basis of the described species. This taxon is part of the Canuellidae Lang, 1944; which comprises 17 different genera[1] (Wells, 2007). Lang (1944) placed this family (together with Longipediidae Boeck, 1865) into the suborder Polyarthra Lang, 1944, which together with the Oligoarthra Lang, 1944, belongs to the Harpacticoida Sars, 1903. Recent studies (Dahms, 2004; Seifried and Schminke, 2003; Tiemann, 1984) give valid reasons for the exclusion of the Polyarthra from the Harpacticoida; hence the terms Harpacticoida and Oligoarthra can be seen as synonyms (Seifried and Schminke, 2003) and the Polyarthra might be a very basal group of the Copepoda (Por, 1984).

2. Materials and methods

The type material was collected at the plateau of the GMS during the expedition P397 (GroMet; German RV "*Poseidon*" in 2010; George, 2010). The GMS is located at 30°00.0 N, 28°30.0 W, about 550 sea miles to the west of the Canary Islands (Fischer, 2005) and

[1] According to the World Register of Marine Species (WoRMS) the number is 18 genera (Walter, 2014), as the taxon *Indicanuella* is included as valid genus. However, as already noted by Bodin (1997), that genus was established by Becker (1972) in his doctoral thesis, that cannot be regarded as a publication ((ICZN Art. 9, § 11). Thus, *Indicanuella* is not valid and has therefore been retained as *species incertae sedis* in *Canuella* T. and A. Scott, 1893 by Wells (2007). I agree with that argumentation and therefore adopt Wells' (2007) assignment.