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A new genus and species of Polynoidae (Annelida, Polychaeta) from Pine Island Bay, Amundsen Sea, Southern Ocean—a region of high taxonomic novelty

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Abstract

We describe a new genus and species of polychaete worm (Polynoidae, Macellicephalinae) from a previously unsampled area of the Southern Ocean, Pine Island Bay in the Amundsen Sea. *Austropolaria* n. gen. is differentiated from other genera in the subfamily Macellicephalinae by a combination of morphological characters such as the number of pharyngeal papillae, body segments, elytra, and position of ventral cirrus. The type species of this genus, *Austropolaria magnicirrata* n. sp., is described based on morphological characters, supplemented by molecular data.

Key words: Polynoidae, Macellicephalinae, *Austropolaria magnicirrata* n. gen. n. sp., Amundsen Sea, taxonomy, DNA 16S 18S

Introduction

Polynoidae is one of six families of polychaetes characterized by scales (elytra) covering the dorsum. They are commonly found in benthic samples and have a global distribution, from the shallow inter-tidal to the hadal trenches. Hutchings (2000) reported at least 165 known genera and 748 species of Polynoidae, making them one of the most diverse polychaete families. With approximately 60 known species, the Southern Ocean harbors around 8% of the known polynoid diversity. As part of the BIOPEARL (Biodiversity Dynamics: Phylogeography, Evolution and Radiation of Life) project (led by P. Enderlein, British Antarctic Survey—see acknowledgements), a large number of polynoid specimens (n= 5571) were collected from Pine Island Bay in the Amundsen Sea, off West Antarctica. The Amundsen Sea is amongst the least studied regions on earth and it is suggested that the Amundsen Sea represents a major gap in our knowledge of the biogeography of Antarctic marine fauna (Linse et al 2006, Griffiths 2010). Prior to this cruise there have been no published reports of any sampling of shelf or slope fauna in this sea and Pine Island Bay in particular is usually inaccessible due to sea-ice conditions. The samples collected are therefore expected to provide new insights into the distribution, diversity and taxonomic composition of benthic marine fauna on the Pacific margin of Antarctica, likely yielding many species new to science. A preliminary taxonomic investigation found at least 20 species of Polynoidae based on morphological examination, of which at least 8 are likely new to science. One of these, a new genus and species of Macellicephalinae Hartmann-Schröder, 1971 is described here.

The subfamily Macellicephalinae was partially revised by Pettibone (1976). The characters that unite Macellicephalinae are: prostomium with median antenna (lateral antennae absent), notochaetae present, notopodia and neuropodia with projecting acicular lobes. The genera of the Macellicephalinae are differentiated by the form of the cirrophores on the cirriferous segments, the number of segments, elytral pairs and pharyngeal papillae and the form of the posterior end.

Macellicephalinae have a worldwide distribution, but appear to be confined to deeper waters, with many species described from bathyal, abyssal and commonly even from hadal depths (trenches) (e.g. Kirkegaard, 1956, Uschakov, 1971, Levenstein, 1971, 1975, 1978), as well as analogous deep-water habitats in shallower depths such