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New species of *Terebellides* (Polychaeta: Trichobranchidae) from the deep Southern Ocean, with a key to all described species

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Abstract

The genus *Terebellides* is, despite its often low abundances, a common and diverse element of benthic soft sediment communities at all depths. In recent years, careful examination of specimens has resulted in numerous descriptions of new species of *Terebellides* increasing the number of species in the genus to over forty. For the Southern Ocean currently only two species are considered valid, both recorded for shelf and slope depths. Here, we present findings of eleven new Antarctic species originating from depths between 480 m and 4720 m. Six of these are formally described (*T. canopus* sp. n., *T. crux* sp.n., *T. mira* sp.n., *T. rigel* sp.n., *T. sirius* sp.n., and *T. toliman*, sp.n.). One species, *T. crux* sp.n., bears two segments with geniculate hooks, a trait already known for the genus but conflicting with the original generic diagnosis. To include this trait the generic diagnosis of *Terebellides* is amended. An identification key for all species of *Terebellides* is given, as well as a maximum parsimony phylogeny of the genus based on morphological characters.

Key words: deep sea, speciation, Antarctica, Weddell Sea, phylogeny, identification key

Introduction

Prior to this study two species of *Terebellides* had been described from the Southern Ocean. *Terebellides kerguelensis* was originally described as a sub species of *Terebellides stroemii kerguelensis* McIntosh, 1885 and elevated to full species status by Parapar and Moreira (2008a). Another study by Parapar and Moreira (2008b) found that *Terebellides longicaudatus* Hessle, 1917 was a valid species and that *Terebellides antarcticus* Hessle, 1917 and *Terebellides minutus* Hessle, 1917, should be regarded as junior synonyms of *T. kerguelensis.* All these species were collected from relatively shallow waters. In part the confusion of the taxonomy of this group is that for a long time, specimens of this genus tended to be identified as *T. stroemii* originally described by Sars (1835) from off the coast of Norway. More recently a series of studies have shown that *T. stroemii* is not a "cosmopolitan" species and represents suites of species which can be identified using a range of characters (Hutchings & Peart 2000; Parapar & Moreira 2008a; 2008b; Parapar *et al.* 2011; Solis-Weiss *et al*. 1991; Williams 1984). During four cruises to the deep Weddell Sea and adjacent basins between 2002 and 2008 (ANDEEP I–III, ANDEEP-SYSTCO) benthic samples from deep water (about 500 m to 5000 m) revealed many specimens which could not be assigned to any of the species previously known from shallow water in the region. In this paper we describe six new species of *Terebellides* and provide a key to all known species of the genus. Also we provide preliminary identification notes on some additional species for which we have only a single specimen. These could not be formally described as we had insufficient material to examine them under the SEM which is critical for these small species.

We also suggest that all former records of *T. stroemii* from the Antarctic region need to be carefully examined as this species does not occur in the region.

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