



## New species of *Terebellides* (Polychaeta: Trichobranchidae) indicate long-distance dispersal between western South Atlantic deep-sea basins

SCHÜLLER, M.<sup>1</sup> & HUTCHINGS, P.A.<sup>2</sup>

<sup>1</sup> corresponding author: Animal Ecology, Evolution & Biodiversity, Ruhr-University, 44780 Bochum, Germany, [myriam.schueller@freenet.de](mailto:myriam.schueller@freenet.de), tel. ++40 (0)234-32-28857, fax: ++49 (0)234-32-14114

<sup>2</sup> Marine Invertebrates, Australian Museum, 6 College Street, Sydney, NSW, 2010, Australia, [pat.hutchings@austmus.gov.au](mailto:pat.hutchings@austmus.gov.au)

### Abstract

During the expedition DIVA 3 in summer 2009, six new species of the genus *Terebellides* (Trichobranchidae) were discovered from the deep Argentine and Brazil basins. Five of these (*Terebellides ginkgo* sp. n., *Terebellides banalis* sp. n., *Terebellides bulbosa* sp. n., *Terebellides concertina* sp. n., *Terebellides diva* sp. n.) are formally described herein; the sixth species is only briefly described as it was represented by only a single specimen. While most species were represented by a few specimens from a single basin, *T. ginkgo* sp. n., was found in relative high abundances in both basins. Molecular analyses of 16S rDNA sequences confirmed the long-distance distribution of this species. Although branchiae are lost in the majority of specimens found, all new species can clearly be separated from each other and *Terebellides* species formerly reported for shallow western South Atlantic waters by the relationships between head structures and anterior segments, and the shape of thoracic and anterior uncini, presenting evidence for a diverse and previously undescribed diversity of Trichobranchidae in the world's deep seas.

**Key words:** Argentine Basin, Brazil Basin, Diva 3, Annelida, Terebellida

### Introduction

In the summer of 2009 the third expedition of the CeDAMar (Census of the Diversity of Abyssal Marine Life) project Diva (Latitudinal Gradients of deep-sea Biodiversity in the Atlantic Ocean), Diva 3, took place. While the expeditions Diva 1 & 2 (2000, 2005) sampled the Eastern South Atlantic abyssal plains from the Cape Basin, Angola Basin up to the Guinea Basin, Diva 3 for the first time took samples in deep Argentine and Brazil waters below 4500 m. The main aim of the Diva project is the investigation of deep-sea invertebrate biodiversity and to investigate potential latitudinal gradients in deep waters (Martinez Arbizu & Schminke 2005; Mühlenhardt-Siegel 2005). During Diva 1 & 2, the stations sampled off the southern African coasts were found to be oligotrophic while the more northerly stations were comparably rich in terms of nutrient content due to influences from the Benguela coastal current and South African up-wellings which was reflected in higher foraminiferan and invertebrate diversity and density at northern sites (Brandt *et al.* 2005; Martinez Arbizu & Schminke 2005; Rose *et al.* 2005; Veit-Köhler 2005). The dominant water mass identified north of the Walvis Ridge was the North Atlantic deep water possibly facilitating a southwards distribution of Northern Atlantic benthic fauna, while the Walvis Ridge is believed to serve as a distributional barrier separating the Angola Basin from the Cape Basin and preventing any Antarctic faunal influences north of the ridge.

The sampled basins during Diva 3 were characterized by nutrient rich sediments in the Argentine Basin with high fractions of foraminiferan shells and comparably coarse grain sizes, and fine, oligotrophic sediments in the Brazil Basin. Both basins share deep-water connections through the Vema Channel and Hunter Channel on both sides of the Rio Grande Rise, through which the Antarctic Bottom Water flows (Ellwood & Ledbetter 1977; McCartney & Curry 1993) serving as a possible south to north pathway for deep-sea species' dispersal between the two basins (Fig. 1). Also, the Antarctic bottom water may account for an exchange with the Southern Ocean deep fauna in the Western South Atlantic.