



Demospongiae of ANT XXIV/2 (SYSTCO I) Expedition—Antarctic Eastern Weddell Sea

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Abstract

In this study, we present the demosponges sampled in the Antarctic Weddell Sea during the ANT-XXIV/2 (SYSTCO I) expedition (28.11.2007–04.02.2008) by the RV Polarstern. This collection comprises 43 species of Demospongiae of which four species are new to science, three of which are described herein, *Cornulum antarcticum* **sp. nov.**, *Cladorhiza penniformis* **sp. nov.**, and *Desmacella koltuni* **sp. nov.** We furthermore provide short descriptions and remarks for all species found, and in cases of rare or badly characterized species we also provide detailed documentation and descriptions of our material. In conclusion, we discuss the comparative faunistic and ecological aspects of our collection with respect to the Weddell Sea sponge fauna.

Key words: Porifera, Demospongiae, Poecilosclerida, Cladorhizidae, *Cornulum*, new species, Antarctica

Introduction

Demospongiae are by far the largest class within the phylum Porifera, comprising more than 8553 species, and about 83 % of all known sponge species (van Soest *et al.* 2012b). Within the Southern Ocean, a remarkably high diversity of demosponges exists, almost equal to that of tropical reefs (Sarà *et al.* 1992). The zoogeographical review by Sarà *et al.* (1992) reported a number of 352 demosponge species described to that date from Antarctic and adjacent seas, while Brandt *et al.* (2007) reported a total of 48 species so far from the Antarctic deep-sea only, which they expected to be only about half of the species richness actually present. Today, the correct number of Antarctic demosponges can be expected to be even larger due to many newly discovered species within the last years (e. g. Plotkin & Janussen 2007; 2008). The sponge fauna of Antarctica, especially that of the shelf, is characterized by a high rate of endemism with biogeographic links mainly to South America and Falkland Islands, but less to the seas of Australia and New Zealand (Koltun 1970; Sarà *et al.* 1992; Janussen & Tendal 2007).

The exploration of Antarctic demosponges has a long and comprehensive history. It began with the first large scientific expeditions to the World oceans, including the Antarctic, at the end of the 19th and the beginning of the 20th century, such as the Challenger expedition, Discovery expedition, Belgica expedition, and Deutsche Südpolarexpedition. This resulted in a number of monographic studies, such as Ridley and Dendy (1887), Sollas (1888), Topsent (1901), Lendenfeld (1907), Kirkpatrick (1908), Hentschel (1914), Burton (1929; 1932). The middle of the 20th century provided rather few, but important studies on Antarctic demosponges, like those by Koltun (1964; 1976) and Boury-Esnault and van Beveren (1982). The beginning of the 21st century brought about a new wave of Antarctic marine research, with a focus on the hitherto poorly investigated deep-sea fauna, particularly the zoobenthos. This resulted in several studies, such as Ríos *et al.* (2004), Ríos and Cristobo (2006), Ríos and Cristobo (2007a; b), Campos *et al.* (2007a; b), Plotkin and Janussen (2007; 2008), van Soest and Baker (2011).

In this study, we present the demosponges sampled during the German ANT-XXIV/2, SYSTCO I expedition by RV Polarstern in 2007/08. This expedition had the aim to study ecological connections between deep-sea