



<http://dx.doi.org/10.11646/zootaxa.3692.1.9>

<http://zoobank.org/urn:lsid:zoobank.org:pub:9DF47E82-8FED-434D-8CB1-81DCBCCB2951>

Two new species of calcareous sponges (Porifera: Calcarea) from the deep Antarctic Eckström Shelf and a revised list of species found in Antarctic waters

HANS TORE RAPP^{1,4}, CHRISTIAN GÖCKE², OLE SECHER TENDAL³ & DORTE JANUSSEN²

¹Centre for Geobiology and Department of Biology, University of Bergen, PO Box 7800, N-5020 Bergen, Norway.

E-mail: hans.rapp@bio.uib.no

²Forschungsinstitut und Naturmuseum Senckenberg, Senckenberganlage 25, D-60325 Frankfurt am Main, Germany.

E-mail: christian.goecke@senckenberg.de; dorte.janusen@senckenberg.de

³Zoological Museum, SNM, University of Copenhagen, Universitetsparken 15, København Ø, DK-2100 København, Denmark.

E-mail: ostendal@snm.ku.dk

⁴Corresponding author. E-mail: hans.rapp@bio.uib.no

Abstract

The paper reports on two new species of calcareous sponges (Porifera, Calcarea) from the Antarctic Weddell Sea, *Clathrina brandtae* sp. nov. and *Leucetta delicata* sp. nov., collected at 600 m depth during the ANT XXIV/2-SYSTCO expedition in January 2008. The new species are described based on a combination of morphological and molecular data. With these new additions the number of species of calcareous sponges reported from south of 50°S (~south of the Polar Front) reaches 50 species. We report an exceptionally high degree of endemism within the group, and as many as 44 out of the 50 species of calcareous sponges are solely confined to Antarctic waters. An updated list of species of calcareous sponges from the area is provided.

Key words: *Clathrina brandtae* sp. nov., *Leucetta delicata* sp. nov., SYSTCO, endemic species, Weddell Sea, deep-water sponges

Introduction

The calcareous sponges, or Calcarea Bowerbank, 1864, comprises the two sub-classes Calcinea Bidder, 1898 and Calcaronea Bidder, 1898. They all have a mineral skeleton composed entirely of calcium carbonate, consisting of free or rarely linked and cemented diactine, triactine, tetractine or polyactine spicules, sometimes in combination with a solid basal calcitic skeleton. More than almost 700 species have been described world-wide (van Soest *et al.* 2012), but recent investigations in poorly studied areas have indicated that the species diversity may be much higher (Wörheide & Hooper 1999; Rapp 2006; Azevedo *et al.* 2009; Rapp *et al.* 2011). The calcareous sponges are small sponges (millimeter to centimeter scale) and have traditionally been regarded as shallow-water organisms (van Soest *et al.* 2012). However, calcareous sponges have also been reported from bathyal and abyssal depths in the North Atlantic, the Southern Ocean and the North Pacific (Hansen 1885; Borojević & Graat-Kleeton 1965; Koltun 1970; Barthel & Tendal 1993; Janussen *et al.* 2003; Rapp *et al.* 2011). Even though the calcareous sponges appear to be present in deep waters in all major oceans it is only in the Norwegian- and Greenland Seas that they represent a highly diverse and abundant part of the abyssal fauna (Rapp & Tendal, unpublished data).

The monophyletic origin of the calcareous sponges has been supported by a range of molecular phylogenies (Adams *et al.* 1999; Manuel *et al.* 2003; Dohrmann *et al.* 2006; Voigt *et al.* 2012). However, several of the traditionally accepted groups at order- family- and genus level have recently been shown to be non-monophyletic (Dohrmann *et al.* 2006; Rossi *et al.* 2011; Voigt *et al.* 2012)

Calcarea from the deep Antarctic shelf have been reported only on a few occasions, mostly from single specimens. For example, Koltun (1976) identified two species from a depth of 603 m and 640 m off Enderby Land and Adelie Land respectively, both in the Indian Ocean sector of Antarctica. Tanita (1959) sampled one calcareous