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Hexactinellida of the genus *Rossella*, of ANT XXIV/2 (SYSTCO I) Expedition—Antarctic Eastern Weddell Sea

CHRISTIAN GÖCKE^{1,2} & DORTE JANUSSEN¹

¹Forschungsinstitut und Naturmuseum Senckenberg, Senckenberganlage 25, D-60325 Frankfurt am Main, Germany

²Corresponding author. E-mail: christian.goecke@senckenberg.de

Abstract

The genus *Rossella* Carter, 1872 comprises a group of very abundant and large sponges, which often dominate and even define the benthic habitats of the Antarctic shelf. While the ecological role and importance of the genus is unquestionable, the taxonomy of *Rossella* has been in a state of flux since its erection in 1872. Several species have been described, many of which have proven to be individual representatives of species with high variation in diagnostic characters, thus many published species are actually synonyms and a valid concept is still lacking. Here, we present the *Rossella*-fauna of one station sampled during the SYSTCO-I expedition in winter 2007/08 at 600 m depth on the lower Ekström-shelf near Kapp Norvegia, Eastern Weddell Sea, Antarctica. This sponge fauna showed some remarkable peculiarities in its characters, especially an unusually large growth of many microscleres, which will broaden the diagnoses of many *Rossella* spp. significantly. Implications for the definitions of these species are discussed.

Key words: Porifera, Hexactinellida, Rossellidae

Introduction

The genus *Rossella* Carter, 1872 comprises sponges reaching large size with remarkable habit, being commonly barrel-shaped with one wide central osculum, the outer surface in most species bears conules from which often long and thick bundles of spicules protrude (Barthel & Tendal 1994). Despite their presumably slow growth rates, *Rossella* spp. are of high abundance in undisturbed areas of the Antarctic shelf, where they appear to be a structuring benthic element. Dayton *et al.* (1974) documented a sponge assemblage which was highly dominated by *Rossella* spp., including *R. racovitzae*, making up 41.8 % of the ground cover and 70.9 % of the sponge biomass. Similar densities have been documented e.g. by Gutt and Koltun (1995), Gutt and Piepenburg (2003), and Teixidó *et al.* (2004). *Rossella* spp. are also important as substrate and habitat for several benthic invertebrates and juvenile fishes (Kunzmann 1996; Gutt & Schickan 1998). Thus, the status of *Rossella* as an element of high ecological importance in the Antarctic zoobenthos is clear. Still, despite almost 150 years of research, the taxonomy of *Rossella* and its many species is complicated and not well understood.

Since the genus was established by Carter in 1872, a large number of species have been attributed to it. A first revision of the genus by Burton (1929) led to a reduction to five Antarctic species and a synonymization of the genus *Aulorossella* Kirkpatrick, 1907. However, as Burton considered only features of megascleres and partly the body form of the sponges, he synonymized taxa which can be clearly differentiated via their microscleres (see below). A further reduction to two species was conducted by Koltun (1976), who also synonymized the genus *Gymnorossella* Topsent, 1916 with *Rossella*. This led to one extremely poorly characterized species *Rossella racovitzae* Topsent, 1916, which comprised all specimens not identifiable as *Rossella antarctica* Carter, 1872. Therefore, Barthel and Tendal (1994) established a new system of *Rossella*, which comprises seven species: *R. antarctica*, *R. racovitzae*, *R. villosa* Burton, 1929, *R. fibulata* Schulze & Kirkpatrick, 1910, *R. nuda* Topsent, 1901, *R. levis* (Kirkpatrick, 1907), and *R. vanhoeffeni* (Schulze & Kirkpatrick, 1910). This system seems to be the most appropriate, as it contains species, which are more or less distinct in their differences and relatively homogenous