Sponge biodiversity of South Georgia island with descriptions of fifteen new species

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Abstract

Sponge samples were taken by SCUBA diving from sixteen sites on the north coast of South Georgia island, south west Southern Ocean. Fifteen new species are described: Iophon husvikensis sp. nov., Clathria (Clathria) stromnessa sp. nov., Clathria (Axosuberites) rosita sp. nov., Clathria (Microciona) matthewsi sp. nov., Lissodendoryx (Ectyodoryx) collinsi sp. nov., Hymedesmia (Hymedesmia) barnesi sp. nov., Hymedesmia (Stylopus) pharos sp. nov., Myxilla (Bartoanchora) ponceti sp. nov., Tedania (Tedaniopsis) aurantiaca sp. nov., Tedania (Tedaniopsis) wellsa sp. nov., Mycale (Mycale) brownorum sp. nov., Mycale (Mycale) cartwrighti sp. nov., Haliclona (Soestella) crowtheri sp. nov., Microxina myxa sp. nov. and Calyx shackletoni sp. nov. Information is also provided on the distribution and in situ external appearance of other sponge species such as Cinachyra barbata Sollas 1886, Polymastia invaginata Kirkpatrick 1907, Iophon unicorne Topsent 1907, Phorbas glaberrimus (Topsent 1917), Myxilla (Ectomyxilla) kerguelensis (Hentschel 1914) and Rossella nuda Topsent 1901. These results increase the previously reported low sponge endemicity in South Georgia, which now better aligns with the high endemicity of other groups. However, because we sampled areas that have been poorly sampled in the Southern Ocean / Antarctic region (shallow subtidal, rocky), many of these species may have wider polar distributions. The effect of the Polar Front as a dispersal barrier to neighbouring biogeographic regions is discussed.

Key words: sponge, South Georgia, Antarctic, Southern Ocean, biogeography, SCUBA diving, taxonomy, endemic

Introduction

The remote sub-Antarctic island of South Georgia is located on the northern extension of the Scotia Arc, which links the Antarctic Peninsula to the Patagonian continental shelf (Fig. 1). Biogeographically South Georgia is considered part of the South Georgia district of the West Antarctic sub-region (Amphipods: De Broyer and Rauscher 1999; Molluscs: Linse 2002). South Georgia is considered a relatively old island with respect to other Scotia Arc islands (such as the South Sandwich Islands and South Orkney Islands) as it split from the Gondwana supercontinent approximately 30 Ma during the mid-Cenozoic (Dalziel and Elliot 1971). The island is also somewhat isolated, being separated from its closest neighbour by both distance and deep water (Hogg et al. 2011). The Southern Ocean is generally very deep with few continental shelf areas (Clarke and Johnston 2006a). Regionally, coastal water is retained on the South Georgia shelf and may, in part, explain its high productivity which in turn supports commercial fisheries and a high diversity of marine bird and