



## A new species of *Sigmaxinella* Dendy, 1897 (Demospongiae, Poecilosclerida, Desmacellidae) from the Tasman Sea

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### Abstract

*Sigmaxinella hipposiderus* **sp. nov.** is described from morphological and molecular datasets, based on a single known specimen collected from the upper margin of a submarine canyon on the edge of the continental shelf, south-east of coastal Victoria (Tasman Sea), Australia. Morphologically, the species is clearly assigned to the genus *Sigmaxinella*, and preliminary molecular data (COI mt DNA) support the close relationship of this new species to other specimens attributed to Desmacellidae. This is the thirteenth species of *Sigmaxinella* and the seventh described for the Australian EEZ. Remarkably, 12 of the 13 known species are recorded predominantly from temperate or subantarctic Australian, New Zealand or South African waters, with only a single species described so far from the temperate Atlantic Ocean.

**Key words:** Porifera, Poecilosclerida, Mycalina, Desmacellidae, *Sigmaxinella*, taxonomy, Australia, Tasman Sea

### Introduction

Desmacellidae Ridley & Dendy, 1886, has received moderate taxonomic attention over the past decade (*e.g.* Hajdu & Van Soest 2002; Salani *et al* 2006; Jeon & Sim 2008). The number of new species is continuing to rise worldwide, with currently 107 species recognised as valid. There are 13 nominal genera assigned to the family, of which six are presently recognised as valid (Van Soest, 2011). Nevertheless, there is still some uncertainty about generic boundaries between some of these, in particular the relationship between the morphologically similar genera *Sigmaxinella* Dendy, 1897 and *Biemna* Gray, 1867. This uncertainty concerns the phylogenetic value of an axially compressed skeleton in desmacellid sponges, as present in *Sigmaxinella*, that are otherwise morphologically very similar to *Biemna*. Ultimately, this uncertainty can only be resolved using datasets other than traditional morphometric features (Hooper & Van Soest 2002).

Within the genera of Desmacellidae the following number of valid species are currently recognised (following Van Soest, 2011): *Biemna* Gray, 1867 (56), *Desmacella* Schmidt, 1870 (30), *Dragmatella* Hallmann, 1917 (1), *Microtylostylifera* Dendy, 1924 (3), *Neofibularia* Hechtel, 1965 (5) and *Sigmaxinella* (12). Within the last genus, 21 nominal species or subspecies have been assigned at one time or another, but nearly half of these are considered synonyms. The most recent publication on *Sigmaxinella* (Salani *et al.* 2006) also included *S. megastyla* Burton, 1959, but this species has been since transferred to *Biemna* (Van Soest, 2011). Species of the genus are predominantly temperate to subantarctic in distribution, with 12 living in the Indo-Pacific and only a single species recorded from the Atlantic Ocean.

In this paper we describe a new species of *Sigmaxinella* from the upper margins of a submarine canyon on the edge of the continental shelf, south-east Australia, Tasman Sea. The species is compared to all others in this genus based on morphology and some preliminary molecular data.