A revision of the genus *Thouarella* Gray, 1870 (Octocorallia: Primnoidae), including an illustrated dichotomous key, a new species description, and comments on *Plumarella* Gray, 1870 and *Dasystenella*, Versluys, 1906

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Abstract

A comprehensive revision of the genus Thouarella is presented. Thirty-five holotypes of the 38 nominal Thouarella species, two varieties, and one form were examined. The number of original Thouarella species has been reduced to 25, mostly through synonymy or new genus combinations. In the process several new species have also been identified, one of which is described here as Thouarella parachilensis nov. sp. The genus is split into two groups based on polyp arrangement: Group 1 with isolated polyps and Group 2 with polyps in pairs or whorls. An illustrated dichotomous key and detailed character table of the 25 Thouarella species are presented alongside an up-to-date account of all species described in the 19th and 20th centuries and summaries of the few described from 2000 onwards. We propose that Thouarella longispinosa is synonymous with Dasystenella acanthina, T. versluysi with T. brucei, and, T. tenuisquamis, T. flabellata, and T. carinata are synonymous with T. laxa. Lastly, we propose that T. bayeri and T. undulata be placed in Plumarella and support recent suggestions that T. alternata, T. recta, T. superba, and T. diadema are also Plumarella.

Key words: Cnidaria, taxonomic revision, sub-Antarctic, octocoral

Introduction

Thouarella Gray, 1870 is a genus of primnoid octocorals within the class Anthozoa. Octocorals usually have small calcium carbonate sclerites over or within their tissue (with a few notable exceptions, discussed in Alderslade & McFadden 2007). Within octocorals there are a wide variety of sclerite shapes and sizes (Bayer et al. 1983) serving different functions, such as limiting adjacent sclerite movement, giving rigidity and support, as well as flexibility (Lewis & Wallis 1991). Primnoids, with the exception of one species of Mirostenella Bayer, 1988, which has a jointed axis, have solid continuous, calcified gorgonin axes (Cairns & Bayer 2009). They are found worldwide but are especially common in the Antarctic seas and Southern Ocean (Thouarella is no exception) and predominantly occur deeper than 400 m, with the deepest record from 5850 m (although primnoids have been recorded from 8 m depth; Cairns & Bayer 2009).

Thouarella is an architecturally delicate genus in which the majority of species have flower-like, open operculate polyps covered with thin sclerites. Species of Thouarella are locally abundant in many areas of the deep sea, especially in the sub-Antarctic, and play an important ecological role, providing habitat for many other animals from a variety of phyla. Although relatively common, little research has focused on species identifications beyond the original type descriptions, many of which are from the turn of last century. Often considered the “bottlebrush” genus, Thouarella spp. in fact have a range of branching forms, similar to several other genera, resulting in specimens being frequently misidentified.

Thouarella is a group of very closely related species; their morphology and many characters historically used to separate species and subgenera are variable and the genus is in need of further revision. Having reviewed all available holotypes we present the most thorough review of this ecologically important genus to date. This has resulted in significant changes to the understanding of several species within this genus and the key characters used for species identification.

Abbreviations

NHM—Natural History Museum, London, UK.
NMNH—National Museum of Natural History, Smithsonian Institution, Washington DC, USA.
MNHWU—Museum of Natural History, Wroclaw University.
SMF—Senckenberg Forschungsinstitut und Museum Frankfurt.
UMUT—University Museum, University of Tokyo.
ZMA—Zoological Museum, University of Amsterdam.
ZMH—Zoological Museum, University of Hamburg.
ZMB—Zoologisches Museum, Berlin.
ZSL—Zoological Society of London, Institute of Zoology.
MYA—million years ago
ZGR—Zapata-Guardiola, Rebeca
SJ—Schleyer, Jon