



## Three new remarkable carnivorous sponges (Porifera, Cladorhizidae) from deep New Zealand and Australian (Macquarie Island) waters

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### Abstract

Most specimens of carnivorous sponges (Demospongiae, Poecilosclerida, Cladorhizidae) collected in the deep Pacific are usually found to be undescribed taxa. New Zealand's EEZ, containing Kermadec Trench and Volcanic Arc to the north, Chatham Rise to the southeast, and parts of Macquarie Ridge to the southwest of New Zealand, as well as parts of Australia's EEZ surrounding Macquarie Island, on Macquarie Ridge, have produced high numbers of new species and possibly new genera, and these are presently being described. In this work, we describe three new species of Cladorhizidae, each remarkable for the 'exceptions to the rule' that they represent. *Abyssocladia carcharias* **sp. nov.**, from Monowai Seamount on the Kermadec Volcanic Arc, has the shape of a pedunculate disc with radiating filaments, and is characterized by three types of unique multidentate isochelae. *Asbestopluma (Asbestopluma) anisoplacochela* **sp. nov.**, from the southern most end of the Three Kings Ridge, is erect and cylindrical with lateral expansions. In addition to the usual *Asbestopluma* microscleres, this species displays a new form of microsclere, termed 'anisoplacochelae'. These unprecedented microscleres bear a plate-like central tooth similar to that of the placochelae of Guitarridae, but the ends are dissimilar in shape and dimensions. *Asbestopluma (Asbestopluma) desmophora* **sp. nov.**, from Cavalli Seamounts off the north east coast of New Zealand, Hikurangi Plateau to the east of the North Island, and the Chatham Rise extending east from the South Island (all New Zealand EEZ), and on Macquarie Ridge (Australia EEZ), is an erect dichotomously branching sponge, that has desma megascleres densely packed into the enlarged base of attachment. Implications for the phylogeny of these three unusual species are considered.

**Key words:** Porifera, *Abyssocladia*, *Asbestopluma*, Cladorhizidae, carnivorous sponges, Kermadec Volcanic Arc, Hikurangi Plateau, Chatham Rise, Macquarie Ridge, New Zealand EEZ, Australia EEZ, deep water, new species

### Introduction

The deep-sea carnivorous sponge fauna appears to be remarkably diverse in deep southwestern Pacific waters, where most specimens collected turn out to be new to science. We have found this to be particularly true for the deep seas surrounding New Zealand, especially on the seamounts of the Hikurangi Plateau and the Chatham Rise, off the east coasts of northern and southern New Zealand, respectively, and the seamounts along the Macquarie Ridge to the southwest of New Zealand, where a high number of new species and possibly new genera have been discovered (Kelly et al., 2009; Vacelet et al., 2009). Many of these species present highly unusual and unique spicule types; Vacelet et al. (2009) described two new species of *Chondrocladia* with a new spicule type, the trochirahbd, that is remarkably similar to microfossil sponge spicules known from Early Jurassic of the Northern Calcareous Alps (Möstler, 1990) and Miocene deep-sea sediments off Iceland (Bukry, 1979).

Three new species presenting unusual and, in the case of two species, unprecedented, spicule types, are described here. *Abyssocladia carcharias* **sp. nov.**, from Monowai Seamount on the Kermadec Volcanic Arc, has a new form of multidentate chelae, *Asbestopluma (Asbestopluma) anisoplacochela* **sp. nov.**, from the Three Kings Ridge, has a new form of placochelae, and *A. (A.) desmophora* **sp. nov.**, from Cavalli Seamounts off the north east