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Review of the Genus *Megalomma* (Polychaeta: Sabellidae) in Australia with Description of Three New Species, New Records and Notes on Certain Features with Phylogenetic Implications

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Abstract. The aim of this paper is to document the presence, diversity and distribution of *Megalomma* in Australia. This could be considered the first valid record of the genus in this continent as the only species previously recorded was transferred to another genus (Knight-Jones, 1997). The species diversity found during this study indicates that the occurrence of *Megalomma* in Australia has been overlooked, as the genus is well represented with at least seven species, living in a range of habitats and depths, and three of which are herein described as new, *M. phyllisae* n.sp, *M. inflata* n.sp. and *M. interrupta* n.sp. Cladistic analyses have been performed after the generation of a matrix of morphological features including those of some well documented species, in order to find informative characters for grouping species and to test the validity of previous artificial classifications. According to the phylogenetic hypothesis presented herein, the fusion of dorsal collar margins to the faecal groove and the presence of collar "pockets" characterizes the apomorphic clade of *Megalomma* species but the number of radiolar eyes is a homoplastic character, varying substantially in the *Megalomma* radiation, meaning that the traditional groups should be reviewed. A dichotomous key is provided to facilitate Australian species identification.

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The genus *Megalomma* Johansson, 1925 is characterized by the presence of subdistal, unpaired, sessile, compound eyes with distinct ommatidia in at least dorsal-most radioles, a unique feature among sabellid polychaetes (Fitzhugh, 1989; Fitzhugh & Rouse, 1999), but to date no phylogenetic analysis of the genus has been performed for assessing the relationships among the species.

The number of species included in this genus has increased in the last decade especially after detailed taxonomic studies in Thailand (Nishi, 1998; Fitzhugh, 2002), the Grand Caribbean (Tovar-Hernández & Salazar-Vallejo, 2006; Giangrande *et al*., 2007), the Eastern Tropical Pacific (Tovar-Hernández & Salazar-Vallejo, 2008) and the Mediterranean Sea (Giangrande & Licciano, 2008), bringing the number of species to 31 (see Table 2).

Most of the taxonomic accounts are based primarily on three morphological characters proposed by Knight-Jones (1997): fusion of dorsal collar margins with the faecal groove, presence of collar "pockets" and distribution of subdistal radiolar eyes. Based on the combination of these characters she produced a table of species' groups that has been used by subsequent authors (e.g., Nishi, 1998;

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