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***Rhopalomma stefaniae* gen. et sp. n., the first ommatid beetle from the Upper Jurassic in Australia (Coleoptera: Archostemata: Ommatidae)**

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Abstract

The first Upper Jurassic fossil of the family Ommatidae (Coleoptera: Archostemata) from Australia is described and illustrated from a single specimen discovered at the Talbragar Fish Bed. *Rhopalomma stefaniae* gen. et sp. n. is classified in Ommatidae based on the length and insertion of the antennae, the tuberculate cuticle, the pattern of elytral striae, the complete epipleura and the presence of scutellary striae. Due to the lack of preservation of crucial characters, *Rhopalomma* cannot be assigned to a subfamily and is therefore classified as Ommatidae *incertae sedis*. *Rhopalomma* fills an important gap in the fossil record of the family, indicating that Ommatidae occurred in Australia from the Lower Jurassic to the present day. Australia is the only place in the world where this family is found in both the fossil record and the living fauna.

Key words: Talbragar Fish Bed, insect fossil, new genus, new species

Introduction

The Archostemata are generally regarded as the most basal suborder of extant beetles, characterised by several ‘primitive’ features shared with fossils of the earliest beetles (Protocoleoptera) dating back to the Upper Permian (Ponomarenko 1969). The group was abundant in the Mesozoic era but today is comprised of only five families, Ommatidae, Cupedidae, Micromalthidae, Crowsoniellidae and Jurodidae (Lawrence & Ślipiński 2013). Three extinct families are recognised as well, Triadocupedidae, Magnocoleidae and Obrieniidae (Ślipiński *et al.* 2011). In Australia the family Ommatidae is represented by four extant species in a single genus, *Omma* Newman: *O. stanleyi* Newman, *O. mastersi* Macleay, *O. rutherfordi* Lawrence and *O. sagitta* Neboiss (Lawrence 1999). Ommatids have been described from many fossil deposits, including the Triassic Madygen Formation in Central Asia (Ponomarenko 1969), the Lower Jurassic Mintaja site in Western Australia (Martin 2010), the Middle Jurassic Daohugou site in China (Tan & Ren 2009), the Upper Jurassic Karatau site in Kazakhstan (Arnoldi *et al.* 1977) and the Lower Cretaceous Yixian Formation in China (Tan & Ren 2006).

The Talbragar Fish Bed is a Jurassic insectiferous fossil deposit, one of only two such sites in Australia (Beattie & Avery 2012; Oberprieler & Oberprieler 2012). It lies at the intersection of a terrestrial and an aquatic ecosystem in southern Gondwana, probably representing a shallow freshwater lake that was covered by volcanic ash flows (Bean 2006). The fossils are preserved in ferruginous shale usually as impressions of white kaolinite (Turner *et al.* 2009) and are of Upper Jurassic age (Kimmeridgian-Tithonian, 151.55 ± 4.27 Ma; Bean 2006). The best known fossils are of teleost fish (Woodward 1895; Wade 1941; Bean 2006) and conifers and other land plants (Walkom 1921; White 1981). Since 2006 numerous insect fossils have also been recovered.

The Talbragar entomofauna is dominated by Hemiptera, mainly a single species of Protopsyllidiidae, followed by Coleoptera, represented by several families of Archostemata and Polyphaga (Beattie & Avery 2012). Other insect orders found include Odonata, Orthoptera, Plecoptera, Neuroptera, Raphidioptera, Hymenoptera, Mecoptera and Diptera. Although hundreds of specimens have been discovered, relatively few have been formally described