



# Article

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## ***Talbragarus averyi* gen. et sp. n., the first Jurassic weevil from the southern hemisphere (Coleoptera: Curculionoidea: Nemonychidae)**

ROLF G. OBERPRIELER & STEFANIE K. OBERPRIELER

CSIRO Ecosystem Sciences, P.O. Box 1700, Canberra, A.C.T. 2601, Australia.

E-mail: rolf.oberprieler@csiro.au; stef\_oberprieler@hotmail.com

### Abstract

The first authentic weevil fossils known from Australia, and the oldest known from the southern hemisphere, are described and illustrated on the basis of two specimens recovered from the Upper-Jurassic Talbragar Fish Bed in New South Wales. *Talbragarus averyi* gen. et sp. n. is classified in the family Nemonychidae based on the presence of scutellary striae on the elytra, the length and insertion of the antennae and the shape of the eyes, prothorax, legs and overall body. An assignment of *Talbragarus* to a subfamily of Nemonychidae is not possible due to the lack of preservation of crucial characters, but it may represent the subfamily Rhinorhynchinae, which is still extant in Australia. *Talbragarus* was probably associated with the dominant plant species found in the Talbragar Fish Bed, the araucariaceous *Podozamites jurassica*, and may have fed on its pollen as adults and larvae as extant Australian Nemonychidae do, indicating that this insect-plant association may have survived in Australia from Jurassic times.

**Key words:** Australia, Talbragar Fish Bed, new genus, new species, insect fossils.

### Introduction

The record of insect fossils in the southern hemisphere remains poor largely due to the paucity of known insectiferous fossil sites, especially in Australia. The Talbragar Fish Bed near the town of Gulgong, New South Wales, Australia, is one of only two insect-rich deposits of Jurassic age in Australia. It is characterised by fossil fish (Woodward 1895, Wade 1941, Bean 2006) and conifers (Walkom 1921, White 1981), well preserved as impressions of white kaolinite imbedded in ferruginous shale (Turner *et al.* 2009). In recent years numerous insect fossils have also been recovered from this site (Beattie 2007, Beattie & Avery 2012, Beattie & Nel 2012, Oberprieler & Yeates 2012, Oberprieler *et al.* in press). The fauna of the Talbragar Fish Bed is of Upper-Jurassic age (Kimmeridgian,  $151.55 \pm 4.27$  Ma; Bean 2006) and thus forms an important link between the older Lower-Jurassic (Sinemurian–Toarcian, 196.5–175.6 Ma) Mintaja (Hill River) fauna in Western Australia (Martin 2008) and the younger Lower-Cretaceous (Aptian, 118–115 Ma) Koonwarra fauna in Victoria (Jell & Duncan 1986). The stratigraphy reveals a shallow freshwater environment at the intersection of a terrestrial and an aquatic ecosystem of southern Gondwana. The lake shore created a lavish environment for insects, many of which are well preserved in usually completely articulated form, probably due to a mass-killing event caused by volcanic ash flow (Bean 2006). As with the other Talbragar fossils, the impressions of the insect fossils are white due to replacement of the cuticle by kaolinite.

The entomofauna of the Talbragar Fish Bed (Beattie & Avery 2012) is numerically dominated by an apparent single species of hemipteran Sternorrhyncha (possibly Protopsyllidiidae), but Auchenorrhyncha (apparent Cicadellidae and Palaeontinidae) and Heteroptera (apparent Corixidae, Gelastocoridae and Notonectidae) have also been found. Coleoptera are numerous too, comprising mainly Archostemata such as Cupedidae, Ommatidae and Schizophoridae and Polyphaga such as Staphylinidae, Hydrophilidae and Elateridae. Other orders recovered are Odonata, Plecoptera, Orthoptera, Neuroptera, Mecoptera, Diptera and Hymenoptera. Blattodea have not yet been found. Over 400 insect specimens have been recovered thus far, but to date only four have been formally described: