



## Two new species of Eulepethidae (Polychaeta) from Australian seas

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### Abstract

Exploration of poorly known regions of the Australian continental margin has resulted in the discovery of two new species in the scale worm family Eulepethidae. *Grubeulepis kurnai* **sp. nov.** occurs in southeastern Australia while *Proeulepethus payungu* **sp. nov.** was collected at one site in the Indian Ocean on the continental margin of Western Australia. *Pareulepis malayana* (Horst, 1913), also collected from the continental margin of Western Australia, is newly recorded from Australia, representing a range extension of that species previously known from Madagascar, Malaysia and the South China Sea. Four species, and four of the six known genera of Eulepethidae are now known from Australian waters. The family Eulepethidae remains species-poor compared with most polychaete families, and now comprises 21 species world wide.

**Key words:** Australia, Eulepethidae, scale-worms, taxonomy, continental slope, continental shelf

### Introduction

The Eulepethidae is one of 6 polychaete families known as “scale-worms”, in which the dorsal cirri of alternating segments are modified to form overlapping scales which cover all or most of the dorsum (Fauchald, 1977). Eulepethids are distinguished from all other scale worms by the neuroaciculae which are distally enlarged to form a “hammer-head” like structure supporting the truncate distal margin of the neuropodium; this structure is the synapomorphy for the family (Fauchald & Rouse, 1997; Glasby & Fauchald, 2000; Pettibone, 1969). The history of taxa now placed within the Eulepethidae has been summarised by Pettibone (1969) who distinguished 4 genera. Twenty one species of Eulepethidae are now recognised, including *Grubeulepis kurnai* **sp. nov.** and *Proeulepethus payungu* **sp. nov.** described here (Table 1).

Besides the unique “hammer-head” like neuroaciculae, other distinguishing characteristics of Eulepethidae from other scale worms are:

- the presence in all genera of 12 pairs of elytrae on segments 2, 4, 5, 7, 9, 11, 13, 15, 17, 19, 21, 24 (the long-bodied genera *Eulepethus* and *Mexieulepis* have additional, much smaller elytrae on posterior segments commencing segment 27 or 28);
- presence of 10–13 pairs of branchiae on non-elytrae-bearing segments commencing segment 6 or 8 (branchial structures also occur in several other scale-worm taxa: Sigalionidae, where they are modified dorsal tubercles, and in several genera of Polynoidae (eg *Branchinotogluma*, *Branchipolynoe*, *Opisthotrochopodus*) where they occur in different positions and on elytral and non-elytral parapodia; these structures are therefore considered unlikely to be homologous with the branchiae of Eulepethidae);
- the small spherical prostomium, stout notochaetae and 2 pairs of plate-like jaws are all characters similar to those found in the scale-worm family Aphroditidae (Eulepethidae were found to be sister group to the clade (Acoetidae+Aphroditidae) in the cladistic analysis of Rouse & Fauchald (1997).

Eulepethids are known from coastal regions of the Pacific, Indian and Atlantic oceans but mainly from equatorial latitudes; the most northerly species is *Mexieulepis amioi* (Imajima, 1974) at 35°N latitude from Japan while the most southerly is *Grubeulepis kurnai* **sp. nov.** described here at 38°S latitude from southeastern Australia. Eulepethids also have restricted bathymetric distributions: only four species have maximum depths in the range