



## Introduction to the taxonomy of Iulomorphidae of New Zealand, with descriptions of two new species of *Eumastigonus* Chamberlin, 1920 (Diplopoda: Spirostreptida: Epinannolenidea)

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### Abstract

The single New Zealand genus, *Eumastigonus* Chamberlin, 1920, of the millipede family Iulomorphidae (Spirostreptida: Epinannolenidea) is reviewed, diagnosed, and its morphological characters are discussed. Redescription of the generotype *E. kaorinus* Chamberlin, 1920, further records of *E. distinctior* Chamberlin, 1920, and *E. hemmingseni* Mauriès, 1983, and descriptions of two new species: *E. hallelujah* sp. n. and *E. waitahae* sp. n. are given.

**Key words:** millipedes, diagnosis, Cambalidea

### Introduction

The long, dark brown-black millipedes of the order Spirostreptida live commonly in rotten logs and are often abundant in New Zealand forests. They are important agents in the breakdown of litter in forests and native shrubland/grassland. They also occur in extreme environments, including haline conditions of coastal dune vegetation and subalpine/alpine grasslands and herbfields. Their morphological habitus and ecological function are similar to members of the Palearctic family Julidae, order Julida. The general colour pattern, head and collum shape, position of ozopores, shape of telson and paraprocts, even of the male gonopods (the presence of structures like a “promerite, “opisthomerite” and “flagellum”) are all shared features. There are, however, important differences as well; the arrangement of the gnathochilarial plates (especially of the mentum and the lingual lamellae), body setation and striation, modification of the first legpair of males, and the specialized morphology of the male gonopods are the basis for Iulomorphidae and Julidae to be classed in different orders. The taxonomy of the Iulomorphidae, however, is embedded in confusion and controversy, ranging from the ordinal and subordinal position of the family to its included genera. We will attempt below to briefly explain the history of this situation, but resolving the various conflicts are beyond the scope of this study.

All iulomorphid species described from New Zealand are now placed in *Eumastigonus* Chamberlin, 1920. Its position has been somewhat conjectural at the familial, subordinal, or even the ordinal levels. Attems (1903, 1914, 1928), Chamberlin (1920), Verhoeff (1944) and Hoffman (1972, 1980) all place it in the order Spirostreptida, suborder Cambalidea (= Cambaloidea), and in the family Cambalidae. Mauriès (1983) shared this opinion, but he treated Cambalida as an order, and recognised two suborders: Cambalidea, with the families Cambalidae and Cambalopsidae, and the new suborder Pseudonannolenidea, comprising four families: Choctellidae, Iulomorphidae, Physiostreptidae, and Pseudonannolenidae. In 1987, however, Mauriès published a new classification, placed Cambalidea with the same component families into Julida, elevated Pseudonannolenida (with two families: Iulomorphidae and Pseudonannolenidae) to the ordinal level separate from Spirostreptida, and listed *Eumastigonus* in the Iulomorphidae Verhoeff, 1924. Five years later basically