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The millipede genera *Gephyrodesmus* Jeekel, 1983 and *Orthorhachis* Jeekel, 1985 in southeastern Australia, a new *Lissodesmus* Chamberlin, 1920 from Victoria, and observations on male leg setae, spinnerets and metatergite sculpture (Diplopoda: Polydesmida: Dalodesmidae)

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Abstract

Descriptions and illustrations are provided for *Gephyrodesmus arcuatus* n. sp., *G. cineraceus* Jeekel, 1983, *G. coolahensis* n. sp. and *G. regilacus* n. sp.; *Lissodesmus grampianensis* n. sp.; and *Orthorhachis catherinae* n. sp., *O. cavatica* Jeekel, 2006, *O. celtica* n. sp., *O. christinae* n. sp., *O. durabilis* n. sp., *O. gloriosa* n. sp., *O. inflata* n. sp., *O. jubata* n. sp., *O. kerewong* n. sp., *O. monteithi* n. sp., *O. oresbia* n. sp., *O. pallida* Jeekel, 1985, *O. paradoxalis* Jeekel, 2006, *O. serrata* n. sp., *O. tallagandensis* n. sp., *O. vinnula* n. sp., *O. weiri* n. sp. and *O. yabbra* n. sp.

Key words: Diplopoda, Polydesmida, Dalodesmidae, Australia, setae, spinnerets, metatergites

Introduction

Dalodesmid Polydesmida are cryptic but common in moderate to high rainfall areas in southeastern Australia. The most frequently collected species are ca. 15–25 mm long with head plus 20 rings (H+20) and prominent paranota.

In Tasmania, most such millipedes are in the *Lissodesmus* group (Mesibov 2006a), i.e. species of *Dasystigma* Mesibov, 2003, *Lissodesmus* Chamberlin, 1920 and *Tasmanopeltis* Mesibov, 2006. The group is well characterised by a similar arrangement of four gonopod branches including a short, medial solenomere (Fig. 2 in Mesibov 2006a), and by a long, conspicuous seta arising at the posterior corner of each paranotum (Fig. 1 in Mesibov 2006a). The fourth H+20 Tasmanian genus with prominent paranota is the monotypic *Tasmanodesmus* Chamberlin, 1920. *T. hardyi* Chamberlin, 1920 lacks the posterior corner seta and has a gonopod telopodite on which the longest of three branches is a lateral solenomere (Mesibov 2004c).

While *Dasystigma*, *Tasmanodesmus* and *Tasmanopeltis* species are all Tasmanian endemics, *Lissodesmus* also occurs in Victoria on the Australian mainland. In the west it extends as far as the Grampians mountains, where it is represented by a new species described below, and in the east *L. martini* (Carl, 1902) reaches Dargo in the eastern highlands (Mesibov 2006a).

In this paper I review superficially similar H+20 dalodesmids found in eastern Victoria, New South Wales and southeastern Queensland. All have an essentially two-branched gonopod telopodite on which the most distally extended branch, as in *Tasmanodesmus*, is a lateral solenomere. I here assign these species to the formerly monotypic genus *Gephyrodesmus* Jeekel, 1983 and to *Orthorhachis* Jeekel, 1985.

Species in the genera *Gephyrodesmus*, *Orthorhachis* and *Tasmanodesmus* are distinguished from those in the *Lissodesmus* group in having branched 'brush' setae on male legs (Fig. 1 and discussion below), dorsal spinnerets usually unprotected by epiproct extensions (Figs. 2–4 and discussion below), long, slightly curved tarsi (Fig. 5) and no long seta at the posterior corner of the paranotum. *Gephyrodesmus* and *Orthorhachis* species, but not *T. hardyi*, also have sculpturing of the metatergites in the form of discrete, variably raised areas (Figs. 6, 7 and discussion below).

Specimens are preserved in 80% ethanol. Preliminary drawings on graph paper were made using an eyepiece grid at 64X or 160X. Gonopods were cleared when necessary in 60% lactic acid and temporarily mounted in the same medium. Other body parts were temporarily mounted in a 1:1 glycerine-water mixture. An FEI Quanta 600 ESEM operated in high-vacuum mode was used to examine preserved material which had been air-dried before sputter-coating with gold or platinum.

Some specimen labels give latitude and longitude to the nearest second or a comparably exact UTM grid reference, but no site elevation. Elevations in these cases were estimated using Google Earth™ software and are given below with 'GE' in brackets. When checked against 1:25000 scale contour mapping for Victoria, GE elevations were within 10–20 m of the mapped value on level and gently sloping terrain, but could be expected to be somewhat less accurate in steep country.