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## MILLIPEDES FROM AUSTRALIA, 8: A NEW GENUS AND SPECIES OF THE FAMILY DALODESMIDAE FROM VICTORIA (DIPLOPODA, POLYDESMIDA)<sup>1)</sup>

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### ABSTRACT

Description of *Gephyrodesmus cineraceus* n.g., n.sp., related most closely to some species of the genus *Pseudoprionopeltis* Carl recorded from New Zealand. Some descriptive remarks on *Lissodesmus martini* (Carl) are added.

### INTRODUCTION

The present paper deals with the millipedes of the family Dalodesmidae collected during a trip through Victoria from the New South Wales border to Melbourne by the author and his wife in November 1980 (Jeekel, 1981). Owing to unfavourable weather conditions only few samples could be obtained, and, unfortunately, most of these

contained only female specimens. On two sites males were secured, one belonging to the only previously recorded Victorian dalodesmid *Lissodesmus martini* (Carl, 1902), the other representing a new species of an undescribed genus.

*Gephyrodesmus* nov. gen.

### Diagnosis.-

Medium-sized Dalodesmidae with 20 somites and a normal poreformula.

Head without particulars; antennae longish,

<sup>1)</sup> Based on data obtained through the aid of a grant (WR 87-157) from the Netherlands Foundation for the Advancement of Tropical Research (WOTRO).

a little clavate, the 6th antennomere a little longer than the 5th.

Collum with sides a little flaring, but not horizontal, and a distinct latero-posterior edge.

Somites moderately constricted, the waist broad. Metatergites with distinct, somewhat inflated areas. Pleural keels weakly developed in a few anterior somites.

Paranota well developed, with angular posterior edges; their level about horizontal.

Sternites longer than wide, without processes or cones. Legs longish, the basal podomeres incrassate, the tarsi widely arched and exceeding the other podomeres in length. Dense ventral pubescence of short setae on the four basal podomeres and globular setae on tibia and tarsus.

Anal somite without particulars.

Gonopods with large coxae which are broadly connected; their free distal part strongly tapering. Prefemur short, ovoid, giving rise to two distal elements: a long and slender tibiotarsus curving widely in a caudal direction, and a solenomerite of about the same length as the tibiotarsus, broad at its base, narrowing strongly halfway. Spermial channel running along the anterior side of the solenomerite, curving towards the lateral side near its apex.

Type-species.-

*Gephyrodesmus cineraceus* nov. spec.

Remarks.-

This new genus seems to be particularly closely related to *Pseudopriionopeltis* Carl, 1902, as restricted by Johns (1964). According to the latter author the now endemic New Zealand genus has five species. The four species of which the male characters are known are readily distinguished into two groups, one containing the type-species *P. cinereus* Carl, 1902, and *P. grassator* Johns, 1964, the other consisting of *P. ravidus* Johns, 1964, and *P. elaphrus* Johns, 1964. In general outline the gonopods of the latter two species closely resemble those of *Gephyrodesmus cineraceus*, except that the outer branch of the telopodite is distally bifurcate. Unfortunately the course of the spermial channel has not been indicated in the New

Zealand species, but it seems likely, considering the overall similarity with *Gephyrodesmus*, that the lateral branch is seminiferous and that the spermial channel ends at the apex of one of its two terminal rami.

Perhaps *P. ravidus* and *P. elaphrus* ought to be separated generically from *Pseudopriionopeltis*. The gonopods of the type-species of this genus differ considerably from those of these two species, in particular in being not as deeply split into two main branches. The two species might eventually be reallocated in *Gephyrodesmus*. For the time being, however, such a step seems premature. There is little doubt that more Australian species of *Gephyrodesmus* will be discovered in the future, enabling a more definite opinion on the proper boundaries of the genus.

Dalodesmidae having a deeply split gonopod telopodite consisting of two curved branches have not yet been recorded from Australia, and on that account *Gephyrodesmus* is easily distinguished from the other Australian members of the family. As yet, it is not possible to establish any particular relationship between *Gephyrodesmus* and the other Australian dalodesmids.

The long, widely curved tarsal joints of the ambulatory legs, a character the taxonomic significance of which is not yet understood but with obvious practical value, separate *Gephyrodesmus* from genera like *Agathodesmus* Silvestri, 1910, and *Lissodemus* Chamberlin. The genera which appear to share this particular feature are *Tasmanodesmus* Chamberlin, 1920, and *Tasmaniosoma* Verhoeff, 1936, both from Tasmania, *Sphaerotrichopus* Attems, 1911, from Western Australia, and *Paurodesmus* Chamberlin, 1920, and *Queenslandesmus* Verhoeff, 1924, both from northern Queensland.

However, as far as the gonopods in these genera have been described or illustrated, these seem to be widely different. The telopodites are erect and split into three or more branches, either down to the base of the acropodite (*Queenslandesmus*), to the middle (*Tasmanodesmus*) or just at the apex (*Tasmaniosoma*). The gonopods of *Paurodesmus* are unknown, but the description of the genus and its type-species seems to indicate identity, at least at

the generic level, with *Queenslandesmus*. In *Sphaerotrishopus* the telopodite of the gonopods is split into two main branches down to the middle of the length, but the solenomerite is just a small third process arising in between the two main branches.

It should be noted that the tarsal joints in *Lissodesmus martini* (Carl) exceed the other podomeres in length, in contrast to the condition described in the Tasmanian species of the genus. But the tarsi in *Lissodemus* are lacking the sabre-like curve characteristic for *Gephyrodesmus* and most other Australian Dalodesmidae.

The discovery of *Gephyrodesmus* constitutes the first clear taxonomic link between the dalodesmid fauna of Australia and New Zealand.

*Gephyrodesmus cineraceus* nov. spec.

Material.-

Sta. 84. Drummer State Forest, 15 km E Cann River, 13.XI.1980 (Eucalyptus forest along Princess Highway, under logs), leg C.A.W. & A.M. Jeekel, ♂ holotype.

Description.-

Colour: Rather dark brownish gray. Labral area of head and the first antennomere paler. Chitinous margins of all body parts, like the headplate, the antennomeres, the collum, somites, legs and anal somite translucent brownish or whitish. Venter, sternites and ventral side of basal podomeres, as well as the tip of the tarsi pale brownish gray.

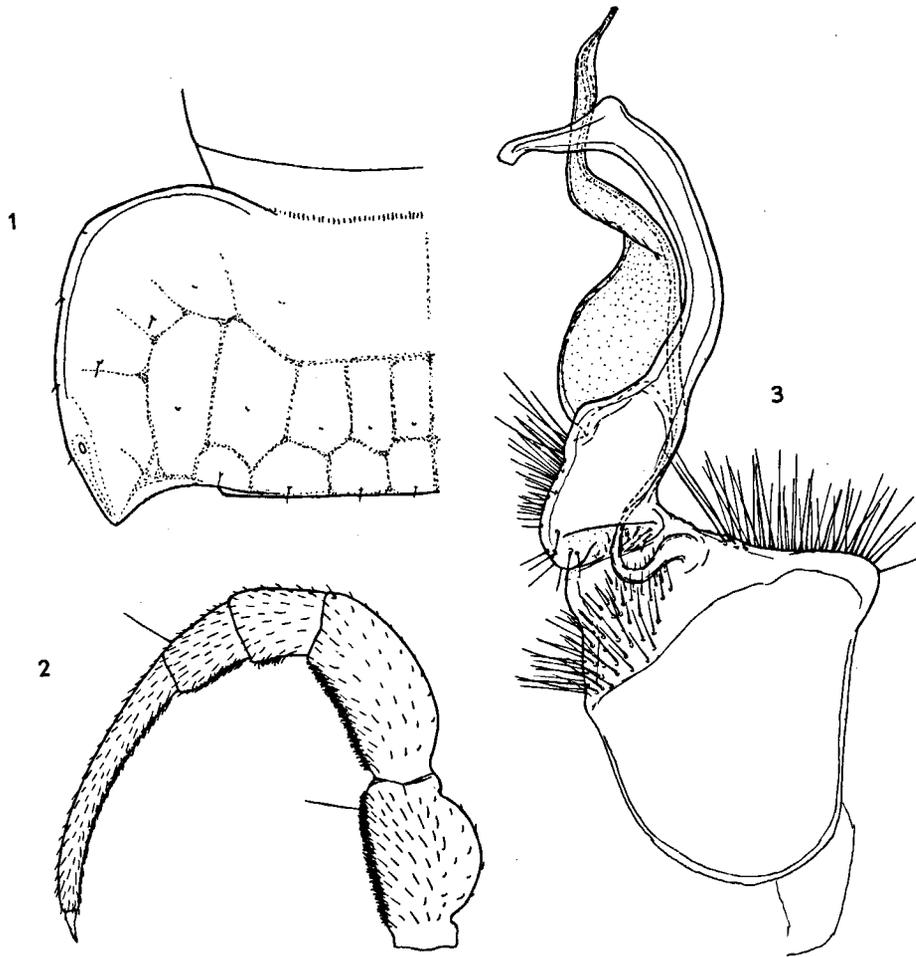
Width: 2.3 mm.

Head and antennae: Labrum rather narrow, the emargination moderately wide and rather deep. Clypeus rather weakly convex, weakly impressed towards the labrum. Lateral margin straight, widely and weakly concave towards the labrum. Headplate smooth, somewhat dullish, regularly and moderately densely punctulate and setiferous up to the frontal region, setae short. Vertex and lateral sclerites of head rather densely set with short, unapparent setae. The vertex with a single pair of longish setae. Clypeus well impressed at the margin of the antennal sockets. Antennal sockets separated by 2.1 times the diameter of a socket or by 0.8 times the length of the 2nd antennomere. Frons weakly

convex. Postantennal groove very wide and moderately deep; the wall in front moderately prominent. Vertex transversely widely and evenly convex, longitudinally rather strongly convex, especially mediocaudad of the antennal sockets. Vertigial sulcus weak in front of border of collum, moderately impressed more orad and vanishing at about the level of the upper margin of the antennal sockets. Antennae longish, rather stout, moderately clavate. The 2nd and 3rd antennomeres subcylindrical, widening distad; the 4th and 5th antennomeres more obconical in shape, the 6th elongate obconical, its side a little convex. relative length of antennomeres 2 to 6: 1.00, 0.95, 0.75, 0.85, 0.95 (6th to 8th inclusive: 1.20). Pubescence moderate in proximal antennomeres to dense in the distal ones; setae short.

Collum: Scarcely narrower than the head. Dorsal outline almost semicircular, slightly transversely elongate. Anterior border widely convex in the middle, more convex towards the lateral sides, and faintly convex again towards the lateroposterior edge; the lateral margin with two faint indentations, diverging caudad. Posterior border widely and rather weakly emarginate in the middle, widely convex more laterally, and weakly concave again towards the lateroposterior edge. Lateroposterior edge about rectangular, quite narrowly rounded, a little produced but not projecting caudad of the mediodorsal caudal margin of the collum. Surface of collum transversely widely and almost evenly convex, a little concave at base of lateral sides, which are slightly flaring but do not reach the horizontal level. Collum longitudinally evenly and widely convex. The surface slightly uneven, but areas are indicated only along the posterior margin; near the lateral edge the surface is slightly inflated. Pubescence arranged in five rows, rather dispersed; the row along the anterior margin consists of about 20 setae, part of which are rubbed off. Setae on faint granules, rather short. Margin of lateral sides finely rimmed, the premarginal furrow weakly developed, disappearing towards the base of the sides.

Somites: Moderately constricted by a broad waist, which is quite sharply set off from the prosomites, and gradually passes over to the



Figs. 1-3. *Gephyrodesmus cineraceus* n.g., n.sp., holotype ♂. 1: left side of 10th metasomite, dorsal aspect; 2: telopodite of ambulatory leg of 7th somite; 3: right gonopod, medial aspect.

metatergites; the transition between waist and metatergites marked by a narrow zone of fine irregular longitudinal striae. Prosomites quite dull caused by a fine pronounced cellular structure. Waist and metatergites dullish, the cellular structure less pronounced. Metatergites with a distinct transverse furrow from the 2nd to the 18th somite. Sculpture of metatergites (fig. 1) in front of transverse furrow indistinct, only a weak median impression. Behind the furrow two series of (usually) six smaller swollen areas. Laterad of these a number of larger and smaller areas of irregular shape. Each of the areas may have a small hair in the middle, but these are often rubbed off. Sides dullish, without sculpture except in the 2nd to 4th somites where they are finely granulate. Pleural keels in 2nd and 3rd somites represented by a weak, curved ridge, concavity upwards,

dorsally demarcated by a sharp furrow which at caudal side curves upward and runs gradually towards the middle of the caudal border of the sides. In the 4th and subsequent somites only this furrow is present, disappearing in the somites of the caudal half of the body. Posterior margin of metasomites finely fringed.

Paranota: Second somite wider than the collum and about as wide as the 3rd; the 4th a little wider than the 3rd. Paranota of 2nd somite with the anterior border widely convex, a little thrust forward. The lateroanterior edge widely angular, with a small but distinct tooth. Lateral border widely and weakly convex, weakly diverging caudad, with two indentations bearing short setae. Posterior edge about rectangular, narrowly rounded, not produced. Caudal border widely emarginate. Anterior, lateral and posterior borders with a finely raised marginal

rim, except near the posterior edge. Margin of paranota in lateral aspect narrow, sloping a little cephalad, straight or faintly convex dorsally. The paranota sloping a little in lateral direction. Paranota of 3rd somite with the anterior border widely rounded, a little shouldered at base, about transverse on the axis of the body. Lateroanterior edge not angular, but a little more narrowly rounded than in the 2nd somite. Lateral border weakly convex, with three weak indentations. Lateroposterior edge about rectangular, narrowly rounded, weakly produced but not projecting behind the mediadorsal margin of the somite. Posterior margin about straight, emarginate at base. Paranota on a horizontal level, the margin in lateral aspect straight or faintly convex and a little sloping cephalad. Paranota of 4th somite similar to those of the 3rd, but the anterior border scarcely shouldered at base, the lateroanterior edge a little more narrowly rounded, and the lateral border more weakly convex, with three indentations. The posterior edge projecting a little behind the middorsal margin. Paranota of 5th and subsequent somites (fig. 1) on a horizontal level, with the anterior border weakly shouldered at base, widely convex at base, more straight laterally. The lateroanterior edge widely subangularly rounded. Lateral border widely convex with three (poreless somites) or four (poriferous somites) indentations generally bearing a short hair. Lateroposterior edge acutely angular, narrowly rounded, becoming more dentiform from the 14th somite onwards, especially on the 17th and 18th somites, but not spinelike. Posterior margin emarginate, finely crenulate. Posterior edge projecting behind the margin of the somites. Pores rather large, situated at the anterior end of a long depression ending near posterior edge, facing laterad and a little dorsad.

**Sternites and legs:** Sternites of middle somites longer than wide (ratio 1.35 : 1.00). Cross impressions moderately developed; the median impression rather wide, the transverse narrower and a little deeper. No sternal cones. Pubescence moderate to rather dense, setae shortish arising from minute granules. Sternite of 4th somite moderately wide, with a deep furrowlike median impression. Sternite of 5th

somite with a deep median furrow, crossed by a very deep transverse furrow. Sternite of 6th somite with a narrow and very deep longitudinal impression, deepest in the caudal half. Transverse impression present only between the successive coxae. Medial side of each coxal socket with a dense brush of setae of moderate length. Ventral side of the posterior margin of the somite widely emarginate. Sternite of 7th somite with a large oval gonopod aperture, a little longer than wide; its lateral border distinctly raised. Ventral side of prosonite in front of gonopod aperture quite narrow, the sternite behind the aperture wider, the coxae somewhat more widely separated than in the other sternites. Pubescence between the posterior coxae moderate. Median impression rather wide and moderately deep. Sternite of 8th somite not modified. Legs of middle somites (fig. 2) longish, rather stout, with the prefemora dorsally convex, the femora weakly arched and tarsi elongate, widely curved. Ventral pubescence quite dense on all podomeres, with short recurved setae up to the postfemur, and globular setae on tibia and tarsus. Pubescence otherwise moderate to rather dense on all sides of the podomeres, with short setae. Relative length of podomeres 2 to 6: 0.60, 0.75, 0.35, 0.30, 1.00. Legs of the first two pairs distinctly smaller than the subsequent legs and less incrassate. Coxa of 2nd leg mediolaterally produced and rounded.

**Anal somite:** Upper profile faintly convex, almost straight. Epiproct of moderate length, moderately thick, narrow. Sides widely concavely converging towards the apex, without stepwise narrowing. The apex narrowly truncate, faintly emarginate. Upper side of anal ring with three transverse rows of rather strong, longish setae on faint granules. Paraprocts weakly globose, setae not on granules. Margins moderately high and moderately wide. Hypoproct parabolically rounded, sides at base slightly concave. Setae not on granules.

**Gonopods:** (fig. 3) Coxa densely pubescent on anterior side, with longish setae, and a densely setiferous area on the mediocaudal side. Tibiotarsus with a low triangular lobe at some distance from its apex. The apex narrowly truncate. Solenomerite inflated in the proximal

half, slightly wrinkled at caudal side. Its distal part narrow, curving caudad and finally rather abruptly distad, tapering towards the apex.

*Lissodesmus* Chamberlin

*Lissodesmus* Chamberlin, 1920: 135; Jeekel, in press.  
*Australopeltis* Johns, 1964: 47.

Remarks.-

This genus was based on a type-species, *L. modestus* Chamberlin, 1920, from Russell Falls, Tasmania. Examination of topotypical material of this species has shown that *Lissodesmus* covers the same generic concept as *Australopeltis* based on *Pseudopronopeltis martini* Carl, 1902, from Melbourne.

*Lissodesmus martini* (Carl)

*Pseudopronopeltis martini* Carl, 1902: 599 (1);  
Johns, 1964: 47 (2).  
*Lissodesmus martini*; Jeekel, in press.

Previous records.-

Melbourne (1), Cockatoo Creek (2).

Material.-

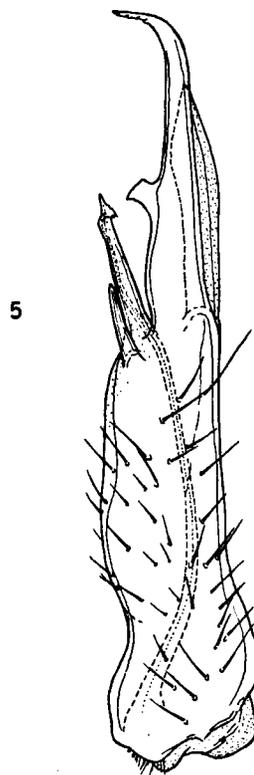
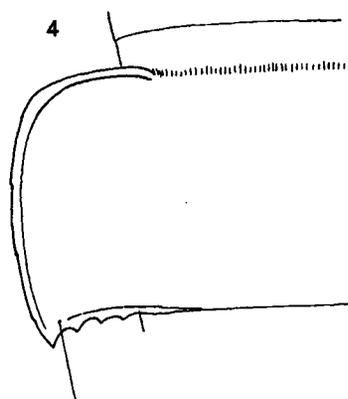
Sta. 93. Ferntree Gully Natn. Park, 18 km NNE Dandenong, 18.XI.1980 (along nature track in temperate rainforest, under logs and litter and in moulded trees), leg. C.A.W. & A.M. Jeekel, 1 ♂.

Description.-

Colour: Pale orange brown, the head, the distal antennomeres, a narrow zone along the anterior and lateral margins of the collum, and the tergites of a few caudal somites with a fine network of reddish brown pigment, sometimes locally more concentrated. Venter, sternites and legs pale pinkish yellow.

Width: 2.0 mm.

Head and antennae: Labrum weakly and widely emarginate. Lateral border of clypeus faintly concave. Antennal sockets separated by 2.2 times the diameter of a socket or by 0.9 times the length of the 2nd antennomere. Relative



Figs. 4-5. *Lissodesmus martini* (Carl), ♂. 4: left side of 11th metasomite, dorsal aspect; 5: telopodite of left gonopod, caudal aspect.

length of antennomeres 2 to 6: 1.00, 0.95, 0.70, 0.70, 0.80 (6th to 8th inclusive: 1.10).

Collum: A little narrower than the head. Anterior border widely and weakly convex in the middle, a little more strongly convex laterally and more widely convex again along lateral sides. The lateral border with three faint undulations. Lateroposterior edge rather narrowly rounded, not angular. In addition to the row of setae along the anterior and lateral margins, the surface has mediadorsally behind the anterior border a few long setae. The long hair at the caudal border of the sides somewhat remote

from the lateroposterior edge.

Somites: Metatergites without transverse furrow, but with a faint transverse impression.

Paranota: Second somite distinctly wider than the collum; the 3rd scarcely wider than the 2nd; the 4th a little wider than the 3rd. Paranota of 2nd somite with the lateroanterior edge moderately rounded, not angular, merging into the lateral margin. Lateroposterior edge widely angular, not produced caudad. Lateral margin with two weak teeth. Paranota of 3rd somite with the lateral margin with three weak teeth. Posterior edge angular, a little more than 90°, slightly produced but not projecting behind the caudal margin of the somite. Posterior margin weakly emarginate, slightly undulate. Paranota of 4th somite similar to those of the 3rd, but the lateroposterior edge a little more produced caudad. Paranota of 5th and subsequent somites (fig. 4) with the lateral margin widely and almost evenly rounded, not diverging caudad, with four weak teeth. Posterior edges produced and projecting behind the margin of the somite, angular, becoming more acuminate in the second half of the body, but not spiniform. Posterior margin concave, with about three distinct teeth.

Sternites and legs: Sternites of middle somites longer than wide (ratio 1.4 : 1.0). Prefemur and femur quite strongly incrassate, dorsally strongly convex. Largest dorsoventral width of femur situated just distad of its basis, about 0.7 times as wide as the length of the femur. Relative length of podomeres 2 to 6: 0.75, 0.80, 0.40, 0.40, 1.00.

Anal somite: Anal ring and epiproct moderately densely setiferous, with rather conspicuous longish setae. Hypoproct apically truncate between the setae.

Gonopods: (fig. 5) In situ reaching cephalad to just in front of the sternite of the 6th somite. Prefemur setiferous up to halfway the total length of the telopodite. The prefemoral process halfway with a rather large somewhat uncate process on its medial side; its apex

curving mesad, finely serrate. Femoral process rodlike, apically acuminate, arising just a little distad of the base of the tibiotarsus, not reaching apex of prefemoral process. Tibiotarsus small, spiniform.

Remarks.-

In the points not mentioned the description of *Lissodesmus modestus* Chamberlin (Jeekel, in press) applies.

The status of this species within the genus *Lissodesmus*, which has five known species in Tasmania, was briefly discussed in a previous paper (Jeekel, in press). Except by the structure of the gonopods, it is well characterized by the paranota having their posterior margins denticulate. The relative length of the tarsi of the legs and the quite strongly incrassate prefemora and femora are also of diagnostic importance.

In the local Victorian fauna *Lissodesmus* is easily distinguished from *Gephyrodesmus* by the colour, the absence of any sculpture and setae on the metatergites (except for the long hairs arising from near the caudal edge of the paranota), and the quite different gonopods.

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