

On two new chelodesmid millipedes from Amapá, Brazil (Diplopoda, Polydesmida, Chelodesmidae)

by

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Abstract

Two new species of Chelodesmidae are described from Amapá state, Brazilian Amazonia: *Leptherpum capiberibe* n.sp. and *Eucampesmella janetae* n.sp., with brief reviews of the taxonomy and geographic distribution of their respective genera. *Eucampesmella* SCHUBART, 1955 is assigned to the tribe Macrocoxodesmini for the first time.

Keywords: **Diplopoda, Polydesmida, Chelodesmidae, *Leptherpum*, *Eucampesmella*, taxonomy, Amapá, Brazil.**

Resumo

Duas novas espécies de Chelodesmidae são descritas do Estado do Amapá (Amazônia Brasileira): *Leptherpum capiberibe* n.sp. e *Eucampesmella janetae* n.sp., com uma brève revisão taxonomica e distribuição geográfica dos dois gêneros. O gênero *Eucampesmella* SCHUBART, 1955 esta afiliado a tribo de Macrocoxodesmini pela primeira vez.

Introduction

Having been neglected by the majority of collectors, Amapá ranks below most other Brazilian states as regards knowledge of its diplopod fauna. This condition is to be regretted, because the scant available evidence suggests that Amapá occupies a transitional location between the major faunal regions of Guyana and the Atlantic coastal mountains, and the influence of the lower Amazon basin as a biogeographic factor further endows the state as one likely to yield significant information on dispersal and evolution.

Within the past years, some progress on the Amapá fauna has been made by the study of material in old collections (e.g., JEEKEL 1963) and the more recent collections of millipedes by Prof. Edmar L. OLIVEIRA (Macapá). As a point of fact, the generality stated in the preceeding paragraph is verified by that one of the two new species we describe here from Macapá belongs to a genus (*Leptherpum*) characteristic of the more northern, Guyana Shield region, while the second is the northernmost element of a genus (*Eucampesmella*) that extends southward into Minas Gerais.

Type material has been shared between the collections of Instituto de Estudos e Pesquisas Tecnológicas do Amapá, Macapá, Brazil (IEPA), Virginia Museum of Natural History, Martinsville, USA (VMNH), Zoological Museum of the Moscow State University, Moscow, Russia (ZMUM), Museo de Zoologia, Universidade de São Paulo, Brazil (MZSP), and Muséum d'histoire naturelle, Genève, Switzerland (MHNG), as indicated hereafter.

Taxonomic part
Family Chelodesmidae
Tribe Chondrodesmini

Chondrodesmini HOFFMAN, 1978, Rev. suisse Zool. **85**: 543; 1999, Myriapodologica **5**: 1.

This taxon, defined in part by the reduced size of the gonopods and their sternal aperture, contains at present six genera, which extend from Amapá westward to Peru and north to southern Mexico, chiefly but not exclusively in uplands.

Genus *Leptherpum*

Leptherpum ATTEMS, 1931, Zoologica **30** (3/4)(79): 48. Proposed for two species. Type species: *Leptodesmus carinovatus* ATTEMS, 1898, by original designation.

Leptherpum - ATTEMS, 1938, Tierreich **69**: 90; JEEKEL, 1963, Stud. Fauna Suriname **4**: 119; HOFFMAN, 1966, Journ. Zool. **148**: 542.

This genus is readily distinguished by the structure of the rather small gonopods: the coxae are elongated on the lateral side of the telopodite base, the prefemoral process has the shape of a large concave shield with a clavate basal projection, and the telopodite is reduced to a small falciform blade (Figs. 4 & 5). As so defined *Leptherpum* encompasses seven species, quite homogeneous in gonopod structure but differing substantially in peripheral characters such as shape of the paraterga. The first review of this group was provided by JEEKEL (1963) who recognized five species and very clairvoyantly perceived a generic relationship with *Chondrodesmus* SILVESTRI, 1897 and *Iphyria* CHAMBERLIN, 1941. Subsequently, HOFFMAN (1966) added a new species and relocated *Polydesmus schomburkii* (ERICHSON, 1848) into *Leptherpum* from its long obscurity as a *species inquirendum*.

With the notable exception of *L. carinovatum*, which also occurs in the Amazon basin around Manaus, the members of this genus are confined to the Guyana Highlands: Venezuela to French Guiana. We are now able to extend the generic range further southeast with the description of a new species occurring at Macapá, nearly at sea-level.

***Leptherpum capiberibe* n.sp. (Figs. 1-5)**

Holotype: ♂ (IEPA), Brazil, Amapá, Macapá, Campus Zoobótonico of Federal University of Amapá, 6.01.1994, leg. J.M. DA ROCHA.

Name: Honours Dr. João Alberto CAPIBERIBE, former Governor of the State of Amapá, in appreciation of his promotion of local ecological research.

Diagnosis: Differs from congeners by a peculiar combination of somatic and gonopod characters (see Remarks below).

Description: Length ca. 55 mm, width of midbody pro- and metazona 4.4 and 7.5 mm, respectively. Coloration in alcohol rather uniform castaneous brown but bases of antennae, subanal scale, legs and sterna contrastingly pallid; genae, fore halves of prozona, posteromedial parts of metaterga, most of peritremata on pore-bearing somites, sides of metazonites (especially just below paraterga) and tip of epiproct a little lighter but never contrastingly so.

Antennae broken off. Head normal, vertigial region bare, almost smooth, with a deep epicranial suture extending to between antennal sockets; clypeolabral region densely pilose. Body polydesmoid, with strongly developed paraterga. In width, head << collum <2=6-16>3=4=5, onward trunk tapering gradually and gently (Fig. 3). Dorsum quite regularly convex (Fig. 1), surface poorly shining. Prozona exceedingly

finely shagreened. Middorsal parts of collum and metazonite 2 virtually smooth, lateral parts very faintly rugulose/microgranulate. Metaterga 3-18 faintly rugulose/microgranulate throughout (Fig. 2), somites 19 and 20 virtually smooth, even midbody metaterga each with very poor traces of a transverse midway impression (Fig. 2). Midline absent. All postcollar metaterga with three transverse rows of insertion points of setae (latter completely abraded), caudalmost row being particularly evident, complete and regular in comparison with both rows in front (Figs. 2 & 3). Surface below paraterga considerably more coarsely microtuberculate. Suture between pro- and metazona rather shallow, almost smooth. Paraterga mostly set at about 1/3 metasomal height (Fig. 1), declivent, relatively narrowly margined laterally, a little better so due to peritremata on pore-bearing somites, always broadly and regularly rounded anteriorly, narrowly rounded at posterior corner, only on somites 17-19 almost pointed (Fig. 3), on somites 16-19 drawn caudad and slightly surpassing rear tergal contour. Limbus inconspicuous, complete, even, translucent, without spikes characteristic of some other congeners. Ozopores dorsolateral, each lying inside a small oval cavity, evident. Epiproct rather long, tip curved down, subtruncate (Fig. 3). Subanal scale roundly subtriangular, 1+1 knobs at caudal margin strongly separated. Pleurosternal carinae almost wanting on somite 3, onward as a more or less complete row of spicules/grains (Fig. 1), caudal part gradually disappearing toward somite 11, a tuberculiform fore part retained until somite 16, onward totally missing.

Sterna almost unmodified, smooth, setose only on a few anteriormost somites, with very poor traces of sternal cones near coxae. Gonopod aperture transverse-oval, simple, relatively small, half as wide as prozonite 7, caudally and laterally demarcated by a collar-like ridge.

Gonopods (Figs. 4 & 5) typical for the genus. Coxite large, elongate, subtending the base of telopodite on lateral side. Telopodite but a little higher than solenomere; lateral piece like a very broad, rounded lobe; basal projection broken off (see below).

Remarks: In the keys provided by JEEKEL (1963) and HOFFMAN (1966), *Leptherpum capiberibe* runs out to the last couplet, which separates *L. loomisi* JEEKEL, 1963 and *L. staheli* JEEKEL, 1950, both from the Wilhelmina Mountains in Suriname. In the shape of the paraterga, the new species is nearer *staheli*, from which it differs in gonopod structure, the telopodite being much broader and distinctly less curved than in that species.

Only one gonopod is present with the unique holotype, and the clavate basal projection of its prefemoral process is broken and lost (location shown by black oval on the drawings, Figs. 4 & 5). Although regrettable, this loss does not detract from the specific identity of the gonopod otherwise.

Tribe *Macrocoxodesmini*

Macrocoxodesmini HOFFMAN, 1990, Pap. Avuls. Zool. 37(11): 167.

In considering this suprageneric category, HOFFMAN (1990) considered it to be monobasic, but obviously related to *Eucampesmella* at the sister-tribe level. Subsequent familiarity with additional species suggests that both *Macrocoxodesmus* SCHUBART, 1947 and *Eucampesmella* are in fact contribal, and the latter genus is herewith assigned to a chelodesmid tribe for the first time.

Genus *Eucampesmella*

Eucampesmella SCHUBART, 1955, Arq. Mus. Nac. 42: 509. Monobasic. Type species: *Pseudoleptodesmus tricuspis* ATTEMS, 1931, by original designation.

Eucampesmella - HOFFMAN, 1967, Entom. Mitt. Zool. Mus. Hamburg 3(59): 3.

The brief review of this genus by HOFFMAN (1967) recognized five species (one with a subspecies) in the northeastern Brazilian states of Pernambuco and Bahia. Additional undescribed species are known also from Minas Gerais and Sergipe, in addition to that which is here described from Amapá. A revision of this group is in progress.

These are striking animals, dorsally glossy black to dark brown with vivid yellow to whitish paratergal spots. In a notable reversal of the condition in *Leptherpum*, these species are generally similar in such peripheral characters as paratergal shape, but the gonopods differ through a range of variations on the basic structural theme. These appendages embody a combination of generalized (e.g., a large median sternum) and specialized (e.g., distolaterally elongated coxae) expressions, but on balance suggest an affinity with

some genera - centered around *Leiodesmus* SILVESTRI, 1897 - which are endemic to extreme southwestern Brazil and adjacent Paraguay. In general, the new species from Macapá seems closely related to *Eucampesmella lartiguei* (SILVESTRI, 1897), but differs from this and other known species by the deep separation of the solenomere branch from the remainder of the telopodite.

The previous northernmost record for this genus is for an undescribed species collected at Fortaleza, Ceará. The presence of *E. janetae* at Macapá thus spans a hiatus of about 1.400 km to the northwest and implies that many additional species may be expected in the intervening states of Pará and Maranhão. While such a disjunction is not unreasonable in poorly-collected tropical regions, the possibility of accidental introduction into Amapá among agricultural products may not be discounted.

***Eucampesmella janetae* n.sp. (Figs. 6-13)**

Holotype: ♂ (IPEA), Brazil, Amapá, Macapá, local residence, in litter of *Eugenia* sp., "jambeiro" (Myrtaceae), 14.02.2000, leg. E.L. OLIVEIRA.

Paratypes: 1 ♀ (IPEA), same locality, together with holotype; 1 ♂ (ZMUM), 1 ♂ (MHNG), 1 ♂ (VMNH), same locality, local residence, on soil in back yard, 23.09.1999, leg. E.L. OLIVEIRA; 1 ♀ (MZSP), same locality, 10.01.2000, leg. E.L. OLIVEIRA.

Name: Honours Dra. Janete CAPIBERIBE, in appreciation of her achievements on the conservation of biodiversity in the State of Amapá.

Diagnosis: Differs from congeners by both main pieces of the gonopod particularly deeply bifid/branching.

Description: Length ca. 52-56 mm in both sexes, width of midbody pro- and metazona 4.9-5.0 and 8.6-9.0 (♂), 5.9-6.0 and 10 mm (♀), respectively. Holotype ca. 55 long, 5.0 and 8.6 mm wide on midbody pro- and metazona, respectively. Coloration rather dark, uniform chocolate reddish brown to blackish (adult ♂), brown with a grey-brown venter (adult ♀) or red-brown (later instars, field observations) except for remarkably contrasting yellowish to entirely pallid, relatively large caudolateral spots on collum and all subsequent metaterga, the spots always reaching the base of paraterga and being somewhat larger on collum and on somites 2 and 3 than on subsequent somites (Figs. 6-8); sterna/venter a little lighter, in darker specimens both venter and legs dark red-brown, in ♀ venter light grey-brown, legs pinkish red.

Antennae long, slender, usual, in situ slightly surpassing somite 3 (♂) or 2 (♀) subdorsally. Head normal, vertexial region bare, almost smooth, with a deep epicranial suture extending to between antennal sockets; clypeolabral region densely pilose. Body polydesmoid, with very strongly developed paraterga. In width, head << collum <2<3=16, onward trunk tapering gradually and gently (Figs. 6 & 8). Dorsum relatively flat, regularly convex, surface of metazona and sterna shining, prozona exceedingly finely shagreened and dull. Collum completely smooth, metaterga 2 and 3 smooth except for a very poorly reticulate presutural region (Fig. 6); metatergum 4 only smooth dorsocaudally, reticulation somewhat increased and extending onto caudolateral spots; metaterga 5-17(18) rugulose/reticulate throughout, onward almost smooth. Metaterga 4(5)-17 each with a shallow but evident transverse midway impression (Fig. 9). Midline absent. All postcollar metaterga with three transverse rows of insertion points of setae (latter completely abraded), caudalmost row being particularly complete and regular in comparison with both rows in front, yet none conspicuous due to dark background coloration. Surface below paraterga almost smooth, very faintly striolate except for pleurotergal carinae. Suture between pro- and metazona rather shallow, almost smooth. Paraterga mostly set at about 1/4 (♂) or 1/3 (♀) metasomal height, rather slightly declivent, relatively narrowly margined laterally, contrastingly better so due to disks on pore-bearing somites, broadly rounded but angulate anteriorly, narrowly rounded at posterior corner, only on somites 17-19 almost pointed (Fig. 9), on somites 16-19 drawn caudad, acutangular, slightly surpassing rear tergal contour. Caudal corner of ♂ paraterga subrectangular on somites 2, 3 and 14, obtusangular on somites 4, 6, 8 and 12 (Figs. 6 & 7), in ♀ largely obtusangular and considerably rounded until somite 17, subrectangular and very narrowly rounded on somite 18, slightly drawn back but narrowly rounded on somite 19. Peritremata almost missing on somite 2, normally narrow, normally on poreless somites only slightly broadened caudad, considerably better so on somites 3 and 4 (Fig. 6). Limbus inconspicuous, complete, even, translucent. Ozopores dorsolateral, each lying inside a small oval cavity, evident; ozopore

disks strongly elevated, set off anteriorly from remaining peritremal rim until somite 15 (Figs 7 & 8). Epiproct rather long, tip curved down, subtruncate (Figs. 8 & 9). Subanal scale subtriangular, caudal tip almost pointed, 1+1 knobs at caudal margin very poorly separated (Fig. 9). Pleurosternal carinae much like in the previous species but more strongly arcuate and with more numerous spinules/grains, caudal part gradually disappearing toward somite 11, a tuberculiform fore part often crowned with a spinule retained until somite 16, very poorly traceable on somite 17, onward totally missing in ♂, generally somewhat more poorly developed and gradually disappearing toward somite 15 or 16 in ♀.

Sterna smooth, very finely shagreened, dull, setose only on a few anteriormost somites, in ♂ with a pair of prominent, digitiform, distally setose, paramedian, contiguous stalks between both male coxae 3 and 4 (Fig. 10); sternal cones near ♀ coxae evident, sometimes missing only near last coxae (Fig. 9). Legs long and slender (Fig. 9), somewhat shorter and slenderer in ♀. Gonopod aperture transverse-oval, simple, relatively large, ca. 4/5 as wide as prozonite 7, caudally with a distinct rounded shelf and a high ridge, laterally with a lower ridge.

Gonopods (Figs. 11-13) typical for the genus, both pieces of telopodite branching particularly deeply.

Epigynal ridge behind ♀ coxae 2 with a small but evident, triangular, ventrocaudal, median projection. Vulvae very high, placed transversely, combined ca. 1/3 as wide as somite 3, strongly elevated paramedially, contiguous, each rapidly declivent laterad to concavely form a small and rather low lateral shelf; each vulva densely setose, subtriangular in ventral or frontal view, with a very high and rather narrowly rounded top and a minor emargination before a low lateral wall.

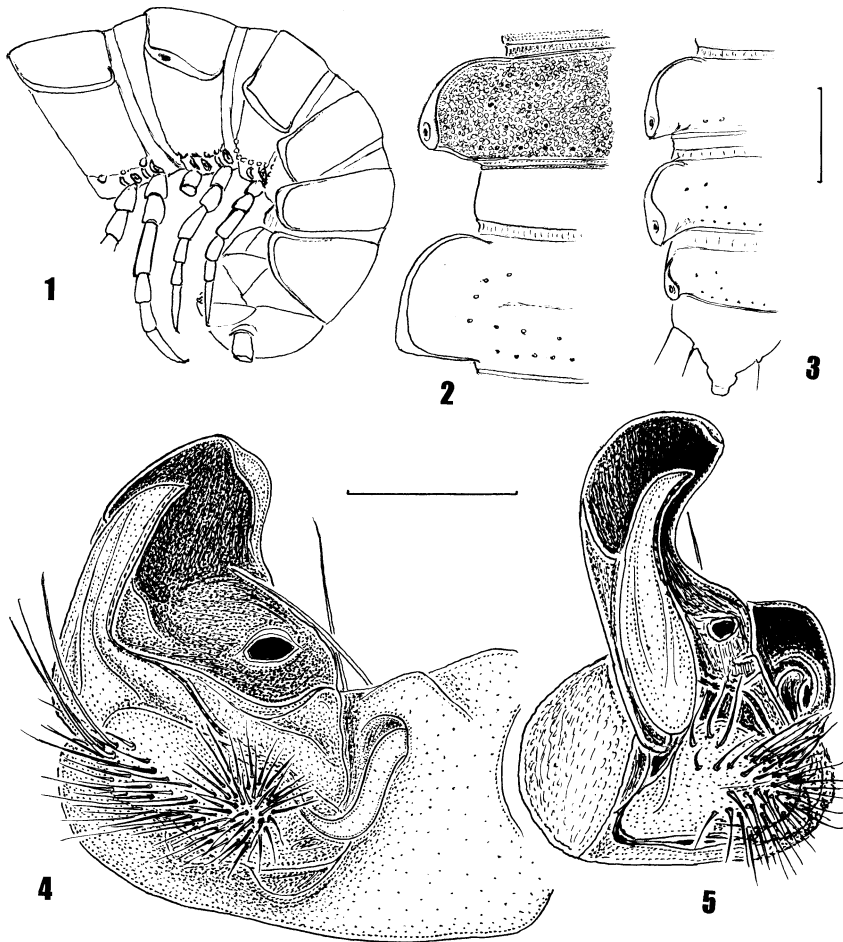
Biological observations: This bright species has not been collected in November/December, possibly being inactive throughout this period of lower rainfall (OLIVEIRA, unpubl.).

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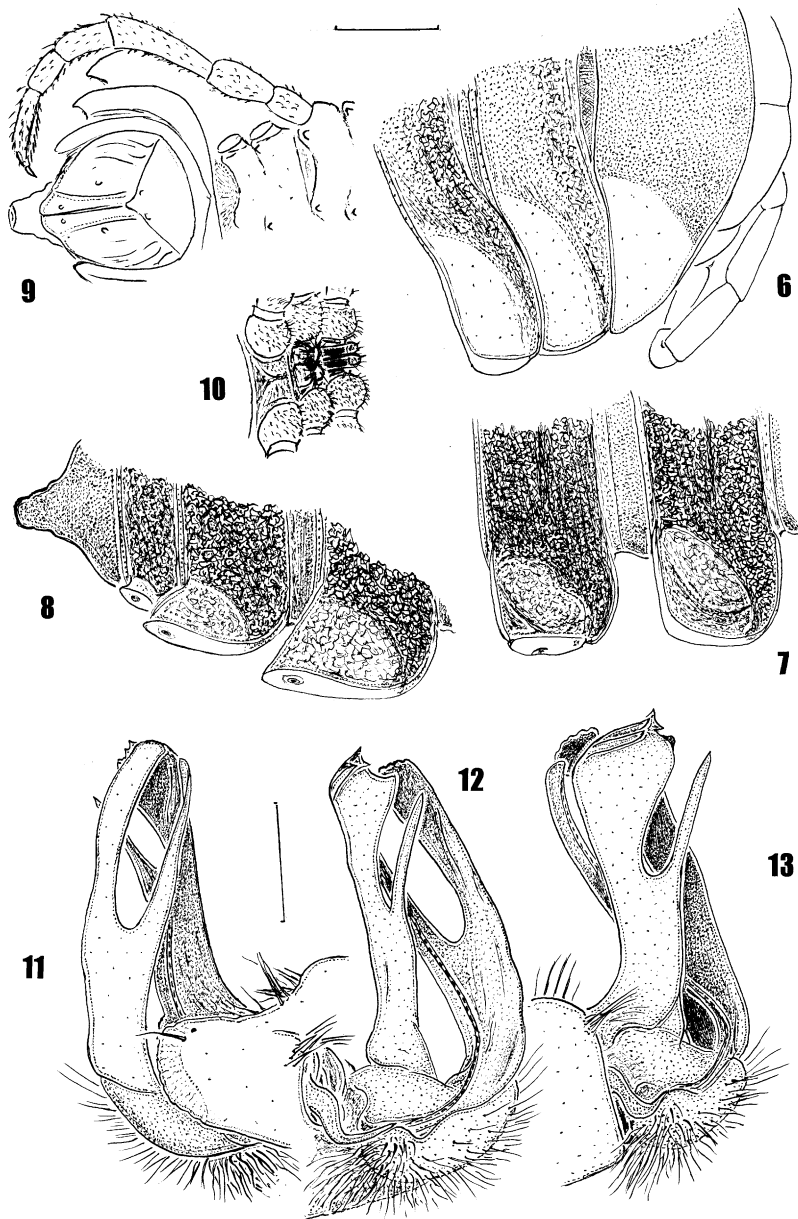
References

- ATTEMS, C. (1898): System der Polydesmiden. Theil 1. - Denkschr. Österr. Akad. Wiss., math.-naturw. Classe **67**: 221-482.
- ATTEMS, C. (1931): Die Familie Leptodesmidae und andere Polydesmiden. - Zoologica (Stuttgart) **30**(3/4): 1-149.
- ATTEMS, C. (1938): Myriapoda 3. Polydesmoidea II. Fam. Leptodesmidae, Platyrrhachidae, Oxydesmidae, Gomphodesmidae. - Das Tierreich **69**: 1-487.
- HOFFMAN, R.L. (1966): Polydesmoid Diplopoda from the Pacaraima Mountains. - Journ. Zool. **148**: 540-553.
- HOFFMAN, R.L. (1967): The identity of *Cordyloporus sulcatus* ATTEMS, 1898: another diplopod riddle solved. - Entom. Mitt. Zool. Mus. Hamburg **3**(69): 183-188.
- HOFFMAN, R.L. (1990): Chelodesmid studies. XXIII. Proposal of a new tribe for the disjunct Brazilian genus *Macrocoxodesmus* (Diplopoda: Polydesmida: Chelodesmidae). - Papeis Avulsos Zool. **37**(11): 167-172.
- JEEKEL, C.A.W. (1963): Diplopoda of Guiana (1-5). In: GEIJSKES, D.C. & P.W. HUMMELINCK (eds.): Studies on the fauna of Suriname and other Guyanas **4**(11): 1-157.
- SCHUBART, O. (1955): Materiais para uma fauna do estado de São Paulo. Os Leptodesmidae. - Arq. Mus. Nac. (Rio de Janeiro) **42**: 507-540.



Figs. 1-5:

Leptherpum capiberibe n.sp., ♂ holotype. 1: Anterior body portion, lateral. 2: Left halves of body somites 10 (also to show tergal texture) and 11, dorsal. 3: Caudal body part, dorsal. 4 & 5: Right gonopod, mesal and ventral, respectively. - Scale bars 2.0 (1-3) and 0.5 mm (4 & 5).



Figs. 6-13:

Eucampesmella janetae n.sp., ♂ paratype. **6:** Right half of anterior body part (pale spots on paraterga completely pale because of lack of a rugulose texture), dorsal. **7:** Right halves of somites 8 and 9 (pale spots on paraterga actually fully pale but somewhat masked due to a rugulose texture), dorsal. **8 & 9:** Caudal body end, dorsal and ventral, respectively. **10:** Sternal structures between coxae 3-5, caudoventral. **11-13:** Left gonopod, lateral, dorsomesal, and submesal, respectively. - Scale bars 2.0 (6-10) and 1.0 mm (11-13).

