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New records of Pauropoda and Symphyla (Myriapoda) from Brazil with description of new species in *Allopauropus, Hanseniella* and *Ribautiella* from the northern Pantanal wetland and from Mato Grosso of Brazil

by

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Abstract

Pauropoda and Symphyla are reported from Mato Grosso of Brazil and for the first time from the northern Pantanal wetland. Three species new to science were found, and are described: the pauropod *Allopauropus pantanalicus* n.sp. in the Pauropodidae; the symphylans *Hanseniella guimaraensis* n.sp. in the Scutigerellidae and *Ribautiella cathetus* n.sp. in the Scolopendrellidae.
Keywords: **Pauropoda, Symphyla, Myriapoda, Neotropical region, new species.**

Resumo

Pauropoda e Symphyla são relatados para Mato Grosso, Brasil e pela primeira vez para o Pantanal do norte. Três novas espécies para ciência foram encontradas e são descritas: o paurópodo *Allopauropus pantanalicus* n.sp. em Pauropodidae; os sínfilos *Hanseniella guimaraensis* n.sp. em Scutigerellidae e *Ribautiella cathetus* n.sp. em Scolopendrellidae.

Introduction

Thanks to many years of collecting in several ecosystems in Central Amazonia by Prof. Joachim ADIS, MPIL Plön/Germany and his collaborators, many species of Pauropoda and Symphyla from there have been described and investigated (SCHELLER 1979, 1992, 1994, 1997, 1999, 2002a, b; SCHELLER & ADIS 1984, 1996, 2002). These taxa are very poorly known from other parts of Brazil.

The Pantanal of Mato Grosso (JUNK et al. 2006) represents one of the largest wetlands of the world and is situated in the center of South America. It is formed in a large depression by the River Paraguay and its tributaries. The study area, situated on the right bank of Rio Cuiabá and the left bank of Rio Bento Gomes, is subjected to annual flooding of 0.6-1.5 m height, generally between December and March. To inhabit the floodplain forests and open grasslands of this environment, terricolous arthropods have to adapt to the unfavorable external conditions to enhance their ability of survival (ADIS et al. 2001). The five specimens of pauropods collected were obtained from emergence traps (ground photo-eclectors; ADIS 2002) in a monodominant

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inundation forest of *Vochysia divergens* (Vochysiaceae) on sandy soil during the rainy season. The symphylan specimens from Mato Grosso (*Hanseniella guimaraensis* n.sp. and *Ribautiella cathetus* n.sp.) were obtained during both rainy and dry seasons from litter (WINKLER extractors; CASTILHO et al. 2005) in a secondary upland forest on latosoil at Chapada dos Guimarães, a table mountain about 50 km NE Cuiabá. One specimen of *H. guimaraensis* also occurred in the Pantanal inundation forest during high-water in a trunk trap.

These studies represent a bilateral cooperation between the Federal University of Mato Grosso (UFMT) at Cuiabá (Prof. Marinêz M. MARQUES and students) and the Max-Planck-Institute for Limnology (MPIL) at Plön/Germany (Prof. Joachim ADIS and collaborators) (cf. MARQUES et al. 2006; PEREIRA et al. 2007).

The holotypes of the new pauropod and the two new symphylan species have been deposited in the Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo, Brazil. Paratypes of *Hanseniella guimaraensis* have been deposited in the MZUSP (15 specimens), in the Natural History Museum of Geneva, Genève, Switzerland (3 specimens), and in the author's collections, with Ulf Scheller, Häggeboholm, Sweden (8 specimens) and with Joachim Adis, MPIL Plön, Germany (5+2 specimens).

Systematics with description of species

Notes

* Abbreviations: ad. = a specimen with the maximum number of legs; subad. ... and juv. ... = a subadult or a juvenile specimen with the number of pairs of legs indicated. These numbers include the rudimentary first pair of legs in *Ribautiella*.

** Length excludes antennae and cerci; the range of variation in the paratypes is given in parentheses.

Class Pauropoda
Order Tetramerocerata
Family Pauropodidae
Genus *Allopauropus* SILVESTRI, 1902
Subgenus *Allopauropus* s.str.
Allopauropus (A.) pantanalicus n.sp. (Figs. 1-9)

Type locality. - Brazil, Mato Grosso (MT), District of Pirizal, Pantanal of Poconé, 16°23'S, 56°18'W, inundation forest Cambarazal (*Vochysia divergens*, Vochysiaceae), ground photo-eclectors.

Type material. - Holotype: ad. 9* (female), 23.X.2004, leg. L.D. BATTIROLA. Paratypes: Same data as holotype: 4 subad. 8 (females). As holotype but 9.X.2004.

Total number. - 5 specimens.

Description

Length. - 0.89 mm**.

Head (Fig. 1). - Submedian setae of rows 2-4 lost. Setae thin, cylindrical, annulate. Relative lengths of setae, 1st row: a_1=10, a_2=15; 2nd row: a_1=?, a_2=23, a_3=18; 3rd row: a_1 =?, a_2=18; 4th row: a_1=?, a_2=20, a_3=25, a_4=30; lateral group: l_1=l_2=30, l_3=38. Ratio a_1/a_1 -a_1 in 1st row 0.8. Temporal organs in tergal view narrow, as long as their shortest interdistance; no pistil in posterior part. Head cuticle glabrous.

Antennae (Fig. 2). - Segment 4 with setae *p*, *p'*, *p''* and *r*; *p'''* not identified. Setae annulate, *p* tapering distally, other setae cylindrical. Relative lengths of setae: *p*=100,

p'=40, p''=29, r=48. Tergal seta p 1.3 times as long as tergal branch t. The latter somewhat fusiform, 3 times longer than its greatest diameter and 1.3 times as long as sternal branch s, this 1.7 times as long as its greatest diameter and with its anterodistal corner distinctly truncate. Seta q thin, cylindrical, densely striate, almost 1.3 times as long as s. Relative lengths of flagella (basal segments included) and basal segments: F_1 =100, bs_1=9; F_2=43, bs_2=9; F_3=80, bs_3=10. F_1 4.3 times as long as t, F_2 and F_3 2.3 and 4.3 times as long as s, respectively. Distal calyces of F_2 with small caps; distal part of flagella axes not widened. Globulus g proportionately small, about as wide as long, ∅ 0.8 of ∅ of t, capsule ∅=1.5 ηm. Antennae glabrous.

Trunk. - Setae of collum segment (Fig. 3) simple, thin, cylindrical, densely striate. Sublateral seta 1.8 times as long as submedian seta; sternite process triangular and without apical incision; appendages barrel-shaped, caps large. Process and appendages pubescent, caps glabrous.

Setae on tergites annulate, on anterior tergite blunt, on posterior ones pointed; 4+4 setae on tergite I, 6+6 on II-IV, 6+4 on V and 4+2 on VI. Posterior setae on tergite VI (Fig. 4) 0.3 of interdistance and 1.6 times as long as pygidial setae a_1.

Bothriotricha. - Relative lengths: T_1=100, T_2=125, T_3=117, T_4=133, T_5=158. All these with simple straight axis, very thin in T_1, T_2 and T_4, thin in T_5. T_3 (Fig. 5) with thicker axis, in distal 1/3 widening into a longish swelling. Pubescence of simple straight hairs, oblique on proximal half T_1-T_4 and on whole the T_5, almost erect on distal halves of T_1, T_2 and T_4.

Legs. - Setae on coxa (Fig. 6) and trochanter of leg 9 short, simple, thin, cylindrical, striate. Corresponding setae on more anterior legs similar but with rudiments of secondary branch. Tarsus of leg 9 (Fig. 7) 3.1 times as long as greatest diameter. Proximal seta curved, tapering, pointed, with short oblique pubescence, 0.2 of length of tarsus and somewhat shorter than distal seta; the latter straight, cylindrical, annulate, blunt. Cuticle of tarsus glabrous.

Pygidium (Fig. 8). - *Tergum*. Posterior margin rounded but with low bulge between *st*. Relative lengths of setae: a_1=10, a_2=47, a_3=93, *st*=7. Setae a_1 short. lanceolate, diverging; a_2 and a_3 long, tapering, directed posteriorly, somewhat curved inwards; *st* clavate, converging. Distance a_1-a_1 2.2 times as long as a_1, distance a_1-a_2 1.3 times as long as distance a_1-a_1 and about 4 times longer than a_2-a_3; distance *st*-*st* 5.7 times as long as *st* and 1.3 times as long as distance a_1-a_1. Surface of *st* and distal part of a_2 and a_3 not completely glabrous.

Sternum. Posterior margin between b_1 broadly indented but with low bulge with median incision below anal plate. Relative lengths of setae (a_1=10): b_1=53, b_2=36, b_3= 16. b_1 and b_2 faintly striate, tapering, b_3 cylindrical, blunt, striate, somewhat diverging, b_2 curved inward, converging. b_1 0.9 of interdistance; b_2 1.7 times as long as distance b_1-b_2, b_3 0.5 of interdistance.

Anal plate (Fig. 9) subtriangular, narrowest anteriorly, lateral diverging margins ending posteriorly into short blunt appendages; posteriorly a median subquadrate lobe from the base of which two cylindrical, diverging, striate, blunt appendages protrude backward-downward; length of appendages 0.5 of length of plate.

Diagnosis. - The new species is close to *Allopauropus (A.) bicorniculus* SCHELLER (SCHELLER 1994) from Amazonas (shape of pygidial setae and anal plate) but there are good distinguishing characters in the length of the posterior row of setae on the tergite VI (submedian setae 1/4 of interdistance in *A. patanalicus*, 1.5-1.6 times as long

as interdistance in *A. bicorniculus*), the shape of the bothriotricha T_3 (with long distal swelling in *A. patanalicus*, no swelling in *A. bicorniculus*), the shape of the tarsus of the last pair of legs (subcylindrical, tapering only distally in *A. patanalicus*, tapering whole the length in *A. bicorniculus*) and the length of the pygidial setae b_3 (0.5 of interdistance in *A. patanalicus*, 0.3 in *A.bicorniculus*).

Etymology. - A latinized adjective of the name Pantanal.

Class Symphyla
Family Scutigerellidae BAGNALL, 1913
Genus *Hanseniella* BAGNALL, 1913
Hanseniella orientalis (HANSEN, 1903)

Localities. - Manaus, Conj. Adrianapolis II, under plant pots in garden, 6 ad., 20.III.1983, leg. I. ADIS. - N of Manaus at 29 km on highway Manaus-Boa Vista (BR-174), grazed pasture (fucada), 4 ad., 18.IV.1997, leg. K. VOHLAND. - N of Manaus at 30 km on highway Manaus-Boa Vista (BR-174), grazed pasture (fucada), 5 ad., 2 subad., 7 juv., 26.IX.1994, leg. J. ADIS et al. - Lago Janauari, on a spit between the Rio Negro and the Rio Solimões 10 km E Manaus, 29 ad., 1 subad., 30 juv., 7.III.1996, leg. J. ADIS. - 20 km NW of Manaus, Tarumã Mirím, secondary forest (capoeira), 2 ad., 1 subad, 1 stad. ?, 16.III.1990, leg. J. ADIS et al. - Mato Grosso (MT), Pantanal, Porto Cercado, under plant pots, 5 ad., 24.VIII.2006, leg M.I. MARQUES.

Total number. - 93 specimens.

H. orientalis has been reported both from the Old World (Sri Lanka, Thailand, Sumatra, Java, Marquesas and Samoa Islands) and from the New World (Mexico, Brazil). Most collecting sites indicate spreading by human activities and it is unknown where the species is indigenous. The occurrence at Porto Cercado in a black organic soil probably from a terra firme site nearby may indicate an indigenous occurrence there.

Hanseniella guimaraensis n.sp. (Figs. 10-17)

Type locality. - Brazil, Mato Grosso (MT), Chapada dos Guimarães, 50 km N of Cuiabá, Centro de Treinamento AMI, 15°26'126"S, 55°47'236"W, alt. 2288 ft.(approx. 686 m a.s.l.), secondary forest on latosoil.

Type material. - Holotype: ad (female), 20.III.2004, leg. M.I. MARQUES, J. & I. ADIS, in litter (WINKLER extraction) (MZUSP). Paratypes: Same data as holotype: 12 ad., 3 juv. 10, 1 juv. 9, 2 juv. 8. As holotype but under stones: 12 ad, 1 subad. 11, 2 juv. 10.

Other material. - Same place as type material, forest litter, 1 ad., 23.V. 2004, and 1 ad., June 2004, forest litter, 23 ad., 1 subad., 1 juv. 10, 3 stad.?, 16.VII.2004, leg. L.D. BATTIROLA et al. (all WINKLER extraction). - Brazil, Mato Grosso (MT), District of Pirizal, Pantanal of Poconé, 16°23'S, 56°18'W, inundation forest Cambarazal, in trunk trap (arboreal photo-eclector downwards; cf. ADIS 2002), mounted in 5 m height on *Vochysia divergens* (Vochysiaceae), 1 ad. (desiccated), 29.II.2004 (high-water), leg. L.D. BATTIROLA.

Total number. - 35 specimens.

Description

Length. - (1.95-)2.55(-3.10) mm.

Head (Fig. 10). - Head short, broadest at the middle, (1.2-)1.3 times as broad as long, with indistinct lateral angle at point of articulation of mandible. Central rod with anterior and lateral branches invisible. Dorsal surface of head densely set with short straight thin setae. Longest setae just inside lateral head angles, these setae about 3 times longer than shortest setae and somewhat longer than longest inner seta at base of antenna. Posterior of antennal base a dense row of setae. Palp of first maxilla (Fig. 11) conical, pointed. Head cuticle smooth, glabrous.

Antennae (Figs. 12-14). - Antennae with (23-)28 and 30 segments; length 0.6 of length of body. Diameter of distal segments about 0.8 of diameter of most proximal segments. Setae decrease somewhat in length outwards. First segment (Fig. 12) short, twice as wide as long with a whorl of 6 setae: 3 thin depressed inner setae and 3 thicker ones, 2 sternal and one tergal. Tergal seta longest, 0.5 of diameter of segment. Second segment (Fig. 12) 1.2 times as long as wide with 9 setae, 3 thin depressed inner setae and 6 thicker ones; in a paratype 10 setae. 3rd segment (Fig. 12) 1.1 times as wide as long with 9 setae, arranged as on preceding segment, and a short spined organ on outer part of tergal side. The latter are on segments 3-17. 10th segment (Fig. 13) about as long as wide with 7 setae, one of them very short and thin; inner and outer setae of the same length. A second whorl of setae begins on outer side of 7th(-9th) segment and is complete on 17th-18th segments. 3rd whorl not found in holotype but is on ventral side of segments 20-27 in some paratypes. Apical segment (Fig. 14) (1.3-)1.4 times as long as its greatest diameter with about 20 setae and one large spined organ. The latter (0.4-)0.5 of the length of segment and with almost straight bracts. First segment glabrous, second segment with sparse pubescence which becomes more dense but thinner outwards.

Tergites (Fig. 10). - 1st tergite rudimentary with 2 very thin setae. 2nd tergite complete, 2.1(-2.2) times as broad as long; posterior margin straight in the middle; anterolateral angles distinct with macrochaetae directed outwards and backwards; the latter 1.2 times as long as diameter of first antennal segment; 20(-24) posteromarginal setae between anterolateral macrochaetae, a few of them about 0.5 of the length of anterolateral macrochaetae. Inner setae of tergite short, thin, subequal in length. Pubescence short, sparse, not reaching posterior margin. 3rd tergite 2.1 times as broad as long with straight posterior margin; anterolateral macrochaetae as on preceding tergite, 25 marginal setae between macrochaetae. Posteromarginal and inner setae and pubescence as on preceding tergite. 4th tergite distinctly broader than preceding one, 3.3 times as broad as long, posteriorly straight (or very indistinctly emarginate). Penultimate tergite with straight posterior margin, setae short, pubescence as on anterior tergites. Long anterolateral or lateral macrochaetae on tergites 2, 3, 4, 6, 7 and 9.

Legs. - Tarsus of first pair of legs (Fig. 15) 3.5(-4.8) times as long as greatest diameter, strongly tapering distally. Longest dorsal row with 5(-6) setae, longest ventral row with 3(-5) setae; distal setae somewhat longer than proximal ones; the longest one most distally on dorsal side, 0.5 of greatest diameter of tarsus. Both claws acuminate, anterior one almost straight, its length 0.1 of length of tarsus and 1.7 times as long as posterior claw. The latter and front seta subequal in length. Pubescence distinct. Trochanter with several short setae and one twice longer than them.

Tarsus of last pair of legs (Fig. 16) (3.6-)4.1(-4.4) times as long as greatest diameter, almost straight, slowly tapering distally. Setae arranged in rows lengthways, longest dorsal row with 5(-6) setae, longest ventral one with 4 setae. Dorsal setae somewhat

longer than ventral ones, longest seta one (0.7-)0.8 of greatest diameter of tarsus. Tibia (2.0-)2.1 times as long as its greatest diameter, its length 0.9 of the length of tarsus; longest row on dorsal side with 4(-5) setae, the one on ventral side with 3(-4) setae; length of setae decreasing in length proximally but only inconsiderably; posterior side with a few setae only. Femur very short with a few setae on dorsal and anterior sides; neither ventral nor posterior setae. Trochanter setose on anterior and ventral sides only, one seta near base longer than the others. Anterior claw sickle-shaped, blunt, 0.2 of length of tarsus; posterior claw almost as long as anterior claw. Pubescence on tarsus, tibia and anterior and dorsal side of femur short but distinct; posterior side of femur and trochanter glabrous.

Styli of 12th pair of legs 3.8 times as long as wide, 0.3(-0.4) of length of tarsus and as long as greatest diameter of tarsus. No additional setae.

There are 7 pairs of fully developed coxal sacs at bases of legs 3-9. Posterior coxal plates of legs 11 and 12 with 2 setae, those of leg 10 with 3 setae.

Cerci (Fig. 17). - Cerci conical, 0.1 of the length of body and (3.3-)3.7(-4.2) times as long as greatest diameter. They are densely set with somewhat curved depressed setae, a few of the most distal ones longest; longest distal seta (0.3-)0.4 of greatest diameter of cercus. Longest dorsal row with 8 setae, longest ventral row has 7 setae. Pubescence dense and short. The longer of the two apical setae 3 times longer than shorter one.

Diagnosis. - *Hanseniella guimaraensis* n.sp. is closely related to *H. caldaria* (HANSEN), *H. orientalis* (HANSEN) (HANSEN 1903) and *Hanseniella indecisa* (ATTEMS) (ATTEMS 1911). It is distinguished from *H. caldaria* e.g. by the structure of the central part of the tergal side of the head (no central rod in *H. guimaraensis* n.sp., rod distinct in *H. caldaria*), by the number of setae on the first rudimentary tergite (2 setae in *H. guimaraensis* n.sp., generally 5 in *H. caldaria*) and by a proportionately shorter femur of the last pair of legs. The latter character distinguishes it readily also from *H. orientalis*. Other good characters separating the new species from *H. orientalis* are the pubescence of the tergites (sparse and minute in *H. guimaraensis* n.sp., coarse in *H. orientalis*), the chaetotaxy of the ventral side of the trochanter of leg 1 (no long setae in *H. guimaraensis* n.sp., several long setae in *H. orientalis*) and the length of the distal setae of the cerci (a few distal setae distinctly longer than the others in *H. guimaraensis* n.sp., proximal and distal setae of the same length in *H. orientalis*). The similarities with *H. indecisa* are fewer and the two species differs particularly by the shape of the setae in general (thin in *H. guimaraensis* n.sp., strong in *H. indecisa*), by the pubescence of the head and tergites (short minute in *H. guimaraensis* n.sp., coarse in *H. indecisa*), and the shape of the claws and the cerci (main claw bent strongly and cerci densely setose in *H. guimaraensis* n.sp., main claw bent only inconsiderably and cerci with fewer setae in *H. indecisa*. Moreover, the styli of the type specimens of *H. indecisa* have additional setae.

Etymology. - A latinized adjective of the name (Chapada dos) Guimarães.

Family Scolopendrellidae BAGNALL, 1913
Genus *Ribautiella* BRÖLEMANN, 1926
Ribautiella cathetus n.sp. (Figs. 19-25)

Type locality. - Brazil, Mato Grosso (MT), Chapada dos Guimarães, 50 km N of Cuiabá, Centro de Treinamento AMI, 15°26'126"S, 55°47'236"W, alt. 2288 ft. (approx. 686 m a.s.l.), secondary forest on latosoil, in litter.

Type material. - Holotype: ad (female), 20.III.2004, leg. M.I. MARQUES, J. & I. ADIS (MZUSP).

Total number. - 1 specimen.

Description

Length. - 2.98 mm.

Head (Fig. 18). - Head 1.1 times as long as broad with rounded lateral angles at points of articulation of the mandibles; broadest at the middle; posterolateral margins evenly rounded. Central rod thin but distinct, not broken; frontal and median branches lacking. Tergal side of head covered sparsely with thin short straight setae. Postantennal organ subglobular with narrow opening anteriorly. Palp of first maxilla (Fig. 19) bud-like, 2.8 times as long as broad and with 3 distal points, the median one longest; lateral points somewhat curved inwards, inner one longer than outer one. Cuticle of head granular.

Antennae (Figs. 20-21). - Right antenna with 16 segments (left broken outside 13th segment). Antenna 0.1 of length of the body. 1st segment (Fig. 20) shorter and thinner than following ones, 1.7 times as wide as long and with 6 very thin setae in a single whorl, 3 of them on inner side. The latter longest, 1.8 times as long as outer seta and 0.2 of greatest diameter of segment. Outer and inner setae on 10th segment of the same length. Longest setae of proximal segments 3.3 times as long as those of apical segment. 2nd segment with 9 setae, inner ones longest. Proximal part of antenna with one whorl of setae on each segment. Secondary whorl begins on sternal side of 9th segment behind the primary whorl but grows never complete and disappears distally. Circular (globular) sensory organs begin on the tergal side of segments 5-15. Other bladder-shaped organs on segments 13-15, the most, 9 ones, on segment 14. Small spined organs begin on inner tergal side of 2nd segment and occur on most segments the apical one included. Apical segment (Fig. 21) subglobular with short setae and 6 short spined organs in small depressions in the cuticle. All segments with distinct pubescence.

Tergites (Fig. 22). - There are 24 tergal plates, 12 of them with triangular posterior processes. The division of the tergites appear to be: tergites 1, 4, 5, 6, 8, 10, 12, 13, 16 undivided, tergites 2, 3, 7, 9, 11, 14, 15 divided. No setae on the triangular processes. 1st tergite rudimentary, short, with 6 short thin setae in an almost straight row. 2nd tergite complete; anterior part with 4 setae in one transversal row, posterior part with 4 setae in an anterior row and 6 in a posterior one; triangular processes small without end swellings and with straight inner margin. 3rd tergite with 6 and 10 setae on anterior and posterior part respectively. The ratio of the distance between the triangular processes to their length (measured from inner basal setae) is 2.1 on 2nd and 3rd tergites. There are two setae between inner basal setae on anterior tergites. All setae thin, insertion areas indistinct; no long anterolateral setae. Cuticle of tergites somewhat granular; triangular processes with short pubescence arranged in 3 rows lengthways.

Legs. - First pair of legs (Fig. 23) reduced to two small roundly conical pubescent knobs each with an apical seta; 8 setae between the leg rudiments. Last pair of legs (Fig. 24) with a subcylindrical tarsus, which narrows at both ends. It is 2.1 times as long as its greatest diameter and has 5 setae on distal half, 4 tergal and one sternal; 3 tergal setae are erect, rather long, straight, and one is depressed, somewhat curved; longest seta about 0.7 of greatest diameter of tarsus and about 0.4 of the length of tibia. Tibia and femur 1.4 and 1.0 times as long as its greatest diameter respectively and with two short and thin setae on distal part of tergal side. Trochanter with 4-5 very short and

thin setae. Claws sickle-shaped, curved similarly. Styli at bases of legs 3-12, small, conical, pubescent with thin distal hair and about twice longer than their greatest diameter. Coxal sacs at bases of legs 3-10. Coxal plates of leg 11-12 with 2 setae.

Cerci (Fig. 25). - 2.5 times as long as greatest diameter, conical, all sides curved, 0.05 of the length of body. Setae thin, straight, longest on proximal part of tergal side; there are 5 setae on tergal side, 3 on outer and 2 on sternal and inner sides. Longest tergal row with 3 setae; longest seta almost 0.4 of greatest diameter of cercus. Terminal area with two striae at base. Apical setae lost. Pubescence of cerci sparse but distinct.

Diagnosis. - Two species in *Ribautiella* are known earlier from the Neotropics, both from Brazil, *R. amazonica* SCHELLER (SCHELLER & ADIS 1984) from near Manaus in Central Amazonia and *Ribautiella tuxeni* ALLEN (ALLEN 1998) from Santarém in Pará. The new species is easily distinguished from the former by the shape of the postantennal organs (subglobular in *R. cathetus* n.sp., longer than wide and generally two-parted in *R. amazonica* SCHELLER), the shape of the first pair of legs (simply conical in *R. cathetus* n.sp., two-parted in *R. amazonica* SCHELLER) and the shape of the claws of the last pair of legs (slowly tapering in *R. cathetus* n.sp., pointed in *R. amazonica* SCHELLER). A good distinguishing character in relation to both *R. amazonica* SCHELLER and *R. tuxeni* ALLEN is the chaetotaxy of the anterior tergites (two setae between the inner basal setae and inner margins of the posterior triangular appendages in *R. cathetus* n.sp., one seta in *R. amazonica* and *R. tuxeni*). Moreover are the inner margins of the posterior triangular appendages of anterior tergites parallel with the body in *R. cathetus* n.sp., converging anteriorly in *R. amazonica* and *R. tuxeni*. Other characters delimiting *R. cathetus* n.sp. from *R. tuxeni* are in the antennae (2nd whorl of setae occurs in the middle in *R. cathetus* n.sp., no 2nd whorl in *R. tuxeni*) and in the last pair of legs (tarsus 2.1 times as long as its greatest diameter in *R. cathetus* n.sp., almost 3 times in *R. tuxeni*; tibia with two short depressed thin setae on posterior part of tergal side in *R. cathetus* n.sp., with two long protruding setae in *R. tuxeni*).

Etymology. - From Latin cathetus = form a perpendicular line (the inner sides of the triangular appendages of the tergites).

Key to the species of *Ribautiella*

ALLEN (1998) presented a key to the species of *Ribautiella* but unfortunately he included neither *R. remyi* HINSCHBERGER nor *R. amazonica* SCHELLER. A new key is presented below including these species and the new one described above.

1. All tergites with straight posterior margin; bothriotrix fusiform ..... *remyi* HINSCHBERGER
- 12 or 13 tergites with triangular processes; bothriotrix thin, threadlike 2
2. First tergite with 8 setae; terminal area of cerci with 7-8 striae ..... *borbonica* JUPEAU
- First tergite with 6 setae; terminal area of cerci with 5 or less striae 3
3. 2nd tergite undivided; styli rounded ..... *delphini* ROCHAIX
- 2nd tergite divided; styli conical 4
4. Anterior part of 2nd tergite with 6 or less setae 5
- Anterior part of 2nd tergite with 9 or more setae 6
5. Terminal area of cerci with 5 striae ..... *schoutedeni* HINSCHBERGER
- Terminal area of cerci with at most 2 striae 7
6. Cerci sparsely setose ..... *machadoi* HINSCHBERGER
- Cerci densely setose ..... *zagnanadina* BRÖLEMANN
7. Styli very short; terminal area of cerci with 2 striae ..... *cathetus* SCHELLER

- Styli well developed; terminal area of cerci without striae 8
8. Anterior part of 2nd tergite with 4 setae; tarsi of last pair of legs about twice longer than greatest diameter; cerci with about 20 setae ..... *amazonica* SCHELLER
- Anterior part of 2nd tergite with 6 setae; tarsi of last pair of legs about 3 times longer than greatest diameter; cerci with less than 10 setae ..... *tuxeni* ALLEN

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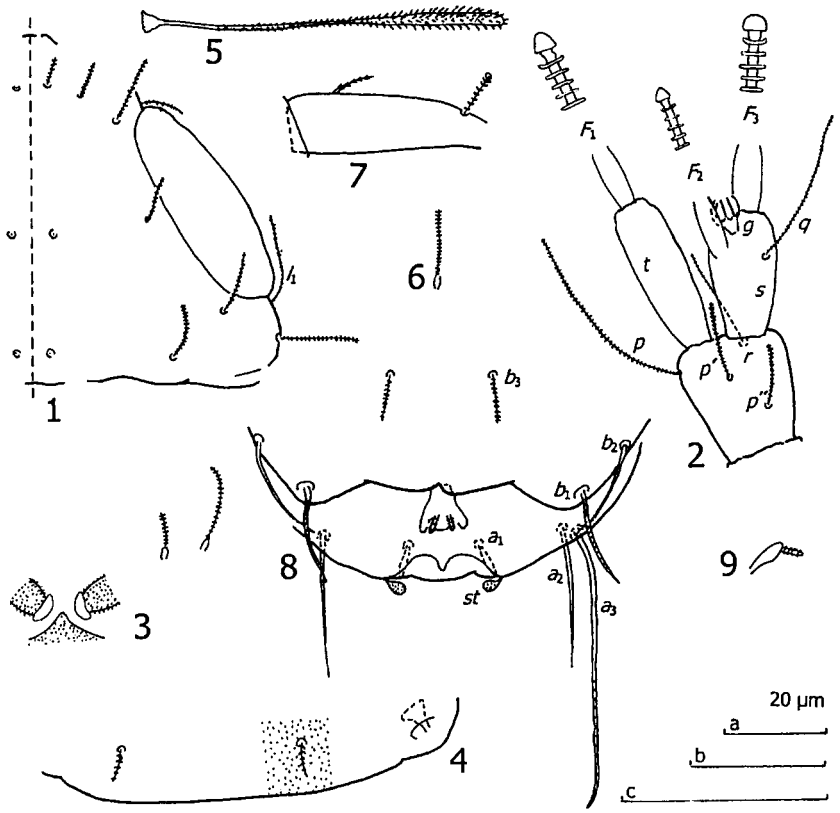
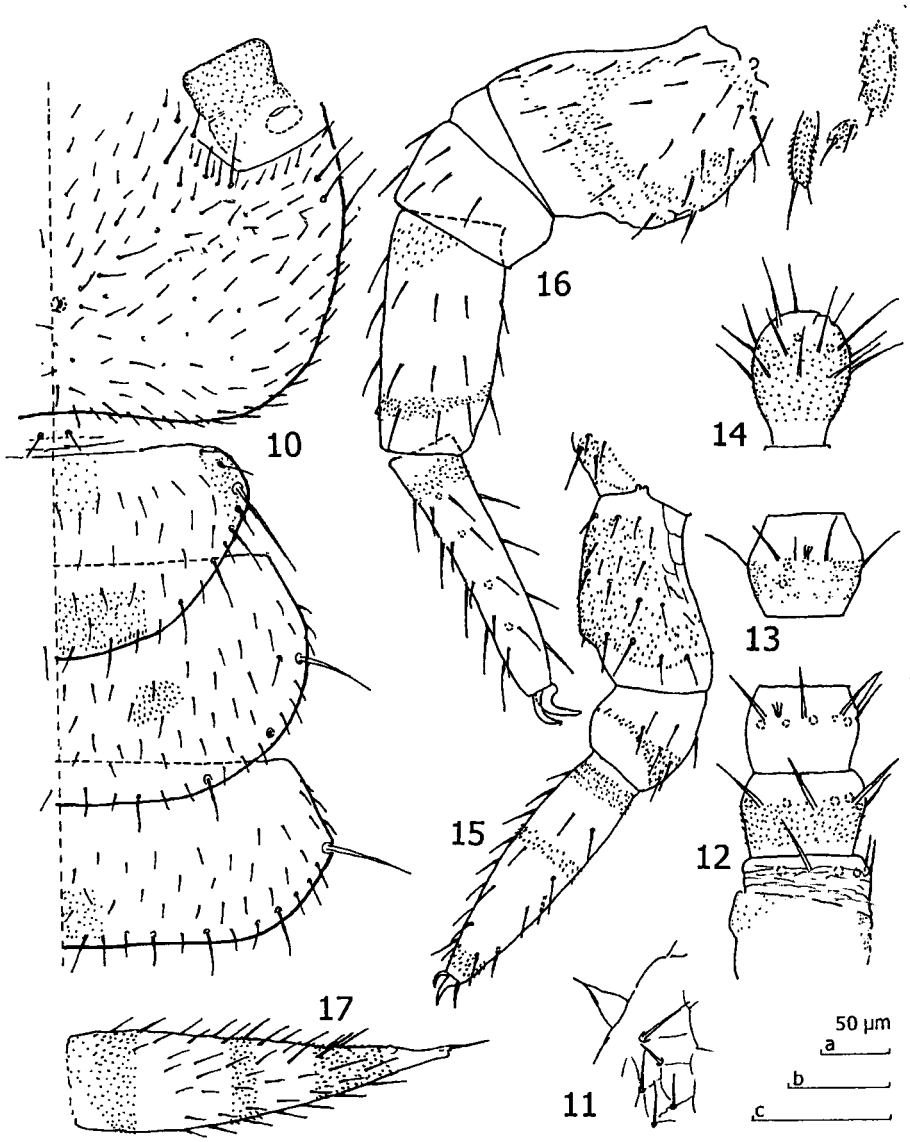


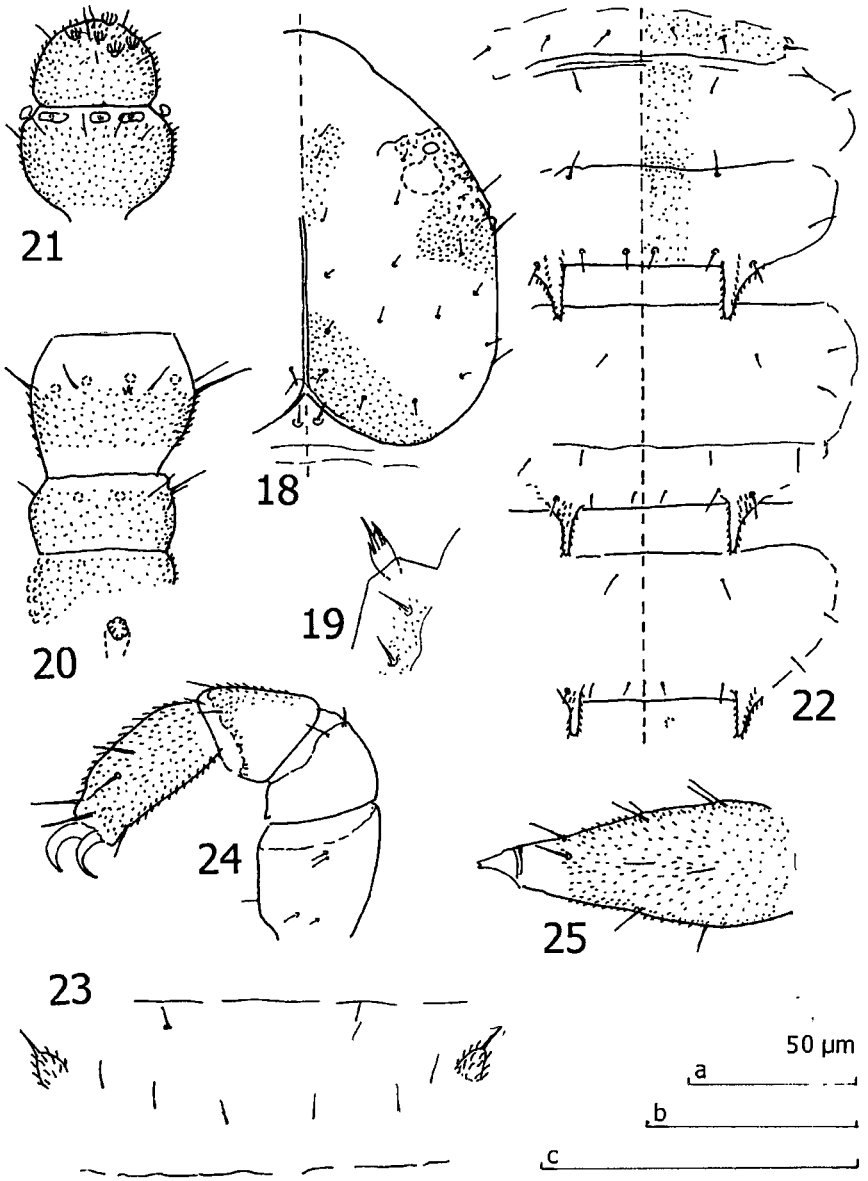
Figs. 1-9:

Allopauropus (Allopauropus) pantanalicus n.sp., holotype.

1: Head, median and right part, tergal view. **2**: Left antenna, sternal view. **3**: Collum segment, median and left part, sternal view. **4**: Tergite VI, posteromedian part and right posterior corner. **5**: T_3. **6**: Seta on coxa of leg 9. **7**: Tarsus of leg 9. **8**: Pygidium, posteromedian part, sternal view. **9**: Anal plate, lateral view. Scale a: 5; b: 1, 3, 4, 6-9; c: 2.



Figs. 10-17:
Hanseniella guimaraensis n.sp., holotype.
10: Head, right half, 1st rudimentary tergite and right half of tergites 2-4, tergal view. **11**: Palp of first maxilla, right side, sternal view. **12-14**: Antenna, right side, tergal view: **12**, first three segments; **13**, 10th segment; **14**, apical segment. **15**: First leg, right side. **16**: 12th leg, right side, anterior view. **17**: Right cercus, outer lateral view. Pubescence only partly drawn in 10, 15-17. Scale a: 10, 17; b: 11-14, 16 ; c: 15.



Figs. 18-25:
Ribautiella cathetus n.sp., holotype.
18: Head, right half, tergal view. **19**: Palp of first maxilla, right side, sternal view. **20-21**: Antenna, right side, tergal view: **20**, first two segments; **21**, apical and subapical segments. **22**: Tergites 1-4, tergite 1 complete, tergites 2-4 median and right part. **23**: First pair of legs. **24**: 12th leg, left side. **25**: Left cercus, outer lateral view. Pubescence only partly drawn in 18, 22, 24. Scale a: 18; b: 22; c: 19, 20-21, 23-25.