

**The taxonomic composition and affinities of the Brazilian
Pauropoda with descriptions of three new species from Central
Amazonia (Myriapoda, Pauropoda: Pauropodidae)**

by

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Abstract

The taxonomic composition and affinities of the Brazilian Pauropoda are discussed. Three new species of Pauropoda are described from Central Amazonia: *Allopauropus hylekoites*, from a blackwater inundation forest near the Rio Tarumã Mirim, *Stylopauropoides dytanekes* and *Polypauropus duckensis* from a primary forest in Reserva Florestal A. Ducke.

Keywords: Pauropoda, distribution, soil fauna, inundation forest, primary forest, Amazonia, Brazil, Neotropics.

Resumo

Discute-se a composição taxonômica e as afinidades dos paurópodos Brasileiros. Descreve-se três novas espécies de Pauropoda da Amazônia Central: *Allopauropus hylekoites*, de uma floresta inundável de água preta perto do Rio Tarumã Mirim, *Stylopauropus dytanekes* e *Polypauropus duckensis* de uma floresta primária da Reserva Florestal A. Ducke.

Introduction

From the important soil fauna material collected in Central Amazonia by PD Dr. Joachim Adis, Plön, and his collaborators, more than 7300 specimens have been studied and 52 species have been recorded, 48 of which new to science (SCHELLER 1994, 1997). Recently three more species new to science have been found from near Manaus, one collected from dead wood in a blackwater inundation forest near the Rio Tatumã Mirim and two species in soil samples from Reserva Florestal A. Ducke. They are described below. Dr. Adis' material has now placed 51 new species and 2 previously described species on the list of the Central Amazonian Pauropoda.

The Pauropoda from the remaining part of Brazil have received little attention. In earlier collections only 4 species were reported. The first records were published by REMY in 1956. He described two species from southern Brazil, *Allopauropus (Allopauropus) bullatus* from Nova Teutonia in Santa Catarina and *A. (A.) brasiliensis* from Rondon in Paraná (REMY 1956b). Some years later the same author reported *Allopauropus (A.)* sp. of the *brevisetus*-group from Pico da Tijuca in Rio de Janeiro (REMY 1962). *Millotauropus temporalis* (HÜTHER) was described from Serra do Navio in Amapá and from Manaus (HÜTHER 1968) and in a later paper the same author (HÜTHER 1985) mentioned that he had found about 60 species belonging to 8 genera in collections from Manaus, Santarém, Serra do Navio and Belém. However, only two species were named, *Millotauropus temporalis* (s.n. *Rosettauropus temporalis* HÜTHER) and *Allopauropus proximus* (s.n. *Allopauropus clavator* REMY).

The taxonomic composition of the Brazilian pauropod fauna

Including the species described below the Brazilian fauna comprises 57 described and named species. They belong to 8 genera in two families, Millotauropodidae in the Hexamerocera and Pauropodidae in the Tetramerocera. Although many more species are likely to be found in Brazil our present knowledge indicates a rich fauna and some general remarks are already possible.

An unexpected outcome of the work is the apparent absence of two families in the Tetramerocera which occur in the tropical parts of the Ethiopian, Oriental and Notogean regions and in the Holarctic, both in the Nearctic and the Palaearctic, viz. Brachypauropodidae and Eurypauropodidae. This absence is peculiar since Brazil has several species of Pauropodidae either in common with or taxonomically close to species in other regions, particularly in the Ethiopian region but also, to a lesser degree, in the Nearctic. The limited and haphazard data from surrounding countries accord with these findings: Argentina (REMY 1950a, 1950b, 1958a, 1962; SCHELLER 1968), Paraguay (HANSEN 1902), Colombia (REMY 1950b), Surinam (REMY 1961). Brachypauropodids occur, however, in Panama (REMY 1954), the Virgin Islands (SCHELLER & MUCHMORE 1989) and Jamaica (REMY 1958b). At least the genus *Panamauropus* might be expected in Brazil.

Knowledge of both species composition and geographic distribution is, disregarding some tenths of kilometres around Manaus, still completely uninvestigated or in an early stage of development. Not only are some genera and many species yet to be discovered or described and named from Brazil, but the complete distribution is unknown for all

the species known both from Brazil and from outside. Among the genera in Pauropodidae, the dominant family in Brazil (Table 1), *Pauropus* and *Stylopaupopus* have not yet been collected but they may occur at least in the south, the latter in the north as well. Another genus, which might be present, is *Diplopaupopus*, previously known from the US and the Virgin Islands.

The family Millotauropodidae is, as elsewhere, poor in species, having one genus worldwide and only 2 species in Brazil while the family Pauropodidae is very diverse. Most species in the latter family belong to subfamily Pauropodinae which has 41 species of the 4 genera *Allopaupopus*, *Cauvetaupopus*, *Stylopaupopoides* and *Hemipauropus*, together 72 % of all Brazilian species. As elsewhere the genus *Allopaupopus* is the most diverse, with 37 species or 65 % of all Brazilian species. The subfamily Scleropaupodinae has 4 species of one genus and Polypaupodinae 10 species of 2 genera.

Connections to the Ethiopian region

All Brazilian genera are common with the Ethiopian region (Table 1) but as far as we know now there are about twice as many genera in the tropical part of Africa as in Brazil. At the species level the differences dominate. Three species only are amphiatlantic: *Allopaupopus dundoensis*, *A. proximus* and *A. tenuis*. However, *Millotauropus temporalis* (HÜTHER) and several of the species described from Central Amazonia (SCHELLER 1994, 1997) show affinities to species in the tropical parts of the Ethiopian region e.g. *Millotauropus acostae*, *Allopaupopus uncinatus*, *A. bicorniculatus*, *A. tenuilobatus*, *A. mirimus*, *A. pachyflagellus*, *A. aius*, *A. hylaios*, *A. amphikomus*, *Scleropaupopus fissus*, *Polypaupopoides unisetus*, *Polypaupopus tropicus*, *P. latebricolus*. This means that more than one fourth of the Brazilian species have distinct relationships with the fauna of tropical Africa. Even if the very widely distributed *A. proximus* and *A. tenuis* are discounted the connections are greater than stated above because 4 Brazilian species with both Nearctic and Ethiopian affinities not have been included.

Because the tectonic splitting of South America and Africa occurred in the Early Cretaceous and because the pauropods seem to have low ability to spread over long distances, the Brazilian pauropods seem to belong to a very old stock and may largely be endemic there.

The number of species in Brazil and tropical Africa (from Senegal to Angola in the west to Kenya and Uganda in the east: 17 collections with well over 1100 specimens) is, as far as known, very different. Brazil has 57 species, tropical Africa 109, but the figures are not directly comparable because the collection methods most often have not been the same and the climate, soil and vegetation of the sampling sites are different. Although in general only very small collections have been studied it is apparent that the pauropods of tropical Africa show a greater diversity than those of Brazil.

Connections to the Nearctic

Disregarding the very widespread *Allopaupopus proximus* no Brazilian Pauropoda species is common to the Nearctic but there are species which show taxonomical similarities with species there. However, the resemblances are less pronounced than in

the direction of the Ethiopian region. On the genus level too the similarities to the Nearctic are limited since only 4 of the 8 Brazilian genera occur in the Nearctic. Furthermore the number of genera in the Nearctic, 15 up to now, is much greater than in Brazil.

Descriptions of three new species in Pauropodidae

Notes

* Abbreviations: ad. ... and subad. ..., an adult or a subadult specimen with the number of pairs of legs indicated; juv. ..., a juvenile specimen with the number of pairs of legs indicated.

** Length of body excluding the antennae, range of variation in adult paratypes given in brackets.

Order Tetramerocerata Family Pauropodidae Subfamily Pauropodinae

Genus *Allopaupopus* SILVESTRI, 1902

1. *Allopaupopus hylekoites* n.sp. (Figs. 1-11)

Type locality. - Brazil, Manaus, Rio Taramã Mirim (03°02'S, 60°17'W), blackwater inundation forest, upright dead tree, under bark and in dead wood 0.5-2 m above high water.

Type material. - Holotype, ad. ♀, locality as above, 11.IV.1997, leg. J. Adis and K. Vohland. Holotype in the INPA collections.

Paratypes: Same data as holotype, 15 ad. ♀ (3 ♂, 11 ♀, 1 sex?), 1 juv. ♀, 2 stad.?, 11.IV.1997, leg. J. Adis and K. Vohland. Paratypes in the INPA collections. - In all 19 specimens.

Remarks. - *Allopaupopus hylekoites* was collected from an upright dead tree in blackwater inundation forest (upper seasonal igapó), near the Rio Taramã Mirim about 20 km upstream from Manaus. The habitat has not previously been recorded for the pauropods of the inundation forests.

Description

Length. - (0.43-)0.48(-0.60) mm.

Head. - Tergal and lateral setae of medium length, one lateral seta rather long. Setae thin and densely annulate, tergal ones subcylindrical and blunt, lateral ones cylindrical and pointed. Relative lengths of setae, 1st row: $a_1 = 10$, $a_2 = (11-)$ 13; 2nd row: $a_1 = (11-)$ 12, $a_2 = (14-)$ 16(-17), $a_3 = (7-)$ 9; 3rd row: $a_1 = 13$, $a_2 = (16-)$ 17; 4th row: $a_1 = (12-)$ 13, $a_2 = (18-)$ 20(-21), $a_3 = (14-)$ 18, $a_4 = (14-)$ 16(-17); lateral group: $l_1 = (30-)$ 36, $l_2 = (22-)$ 23(-25), $l_3 = (18-)$ 22(-23). The ratio a_1/a_1-a_1 is in 1st row 0.9(-1.0), in 2nd row (0.6-) 0.7, in 3rd row 0.9 and in 4th row (0.7-)0.8. Temporal organs ovoid, (1.2-)1.3 times as long as their shortest distance apart; no pistil; small pore at the posterior margin at a level of l_1 . Head cuticle glabrous.

Antennae. - Segment 4 with 4 setae, the p -group cylindrical, annulate, blunt; r subcylindrical, tapering, striate, pointed. Relative lengths of setae: $p = 100$, $p' = (54-)$ 56(-61), $p'' = 41(-)$ 53, $r = (43-)$ 46(-47). Tergal seta p (1.4-)1.5 times as long as tergal branch t . The latter short, almost cylindrical, 1.5(-1.7) times as long as its greatest diameter and about as long as sternal branch s which is 1.4(-1.6) times as long as its greatest diameter and with its anterodistal corner strongly truncate. Seta p on 4th segment, (1.2-)1.3 times as long as s . Relative lengths of flagella (base segments included) and base segments: $F_1 = 100$, $bs_1 = 6(-)$ 8; $F_2 = 38(-)$ 42, $bs_2 = (3-)$ 4; $F_3 = (84-)$ 87(-91), $bs_3 = 7$. The F_1 (5.0-)5.8 times as long as t , F_2 and F_3 (1.7-)2.3 and (4.6-)5.3 times as long as s respectively. Distal calyces subhemispherical, those of F_2

smallest; distal part of flagella axes most insignificantly widened. Globulus g 1.3(-1.4) times as long as greatest diameter, ≈ 9 bracts; length of g 0.6(-0.7) of the length of s , diameter 0.6(-0.8) of the greatest diameter of t . Antennae glabrous.

Trunk. - Setae of collum segment simple, subcylindrical, annulate, blunt; sublateral one (2.9-)3.0(-3.2) times as long as submedian one; sternite process narrow and with small anterior incision; appendages cylindrical with low flat caps; anterior part of process distinctly pubescent, appendages minutely.

Setae on tergites of medium length, subcylindrical, annulate, blunt. 4+4 setae on tergite I, 6+6 on II-V, 4+2 on VI; setae on posterior tergites somewhat shorter than on anterior ones. Length of submedian posterior setae on VI (0.2-)0.3 of their distance apart and (0.6-)0.7 of the length of pygidial a_1 . Tergites I-V indistinctly divided transversely.

Trichobothria with straight simple axes; T_3 with distal swelling which is widest in proximal half, twice wider than long and almost 0.2 of the length of trichobothrium. The T_1 - T_2 and T_4 - T_5 with very thin axes and simple oblique-erect pubescence hairs, whorled in distal halves, longest on T_1 . Axes of T_3 somewhat thicker and with oblique short pubescence on proximal half, more distally increasing in length and whorled; most distally an end-swelling which is (1.5-)1.9 times as long as its greatest diameter and covered with dense short erect pubescence. Relative lengths of trichobothria: $T_1 = 100$, $T_2 = 97(-105)$, $T_3 = (85-91)(-96)$, $T_4 = 102(-108)$, $T_5 = (119-120)(-127)$.

Penes (paratypes only) subconical, submedian sides almost straight, lateral ones rounded; they are glabrous, 1.3 times as long as their greatest diameter; distal seta long, 1.1 times as long as penis.

Legs. - Setae on coxa and trochanter of legs 1-9 simple, subcylindrical, densely striate. Coxal seta of leg 2 in male resembles coxal setae of the other legs. Tarsus of leg 9 tapering, short, 1.7(-2.9) times as long as their greatest diameter; setae cylindrical, annulate, blunt, proximal one 0.2 of the length of tarsus and (0.8-)0.9 of the length of distal seta. Cuticle of tarsus with faint pubescence.

Pygidium. Tergum. - Posterior margin with large median triangular lobe between a_1 . Relative lengths of setae: $a_1 = 100$, $a_2 = 100(-125)$, $a_3 = 155(-192)$, $st = (81-83)(-95)$. All setae striate; a_1 , a_2 and a_3 cylindrical, blunt, somewhat diverging, a_3 also curved inwards; st tapering, pointed, striate, curved inwards and converging. Distance $a_1 - a_1$ 1.2(-1.4) times as long as a_1 ; distance $a_1 - a_2$ 2.5(-3.0) times as long as distance $a_2 - a_3$; distance $st - st$ twice longer than st and (1.3-)1.4 times as long as distance $a_1 - a_1$. Cuticle glabrous.

Sternum. - Posterior margin with broad shallow indentation below the plate. Relative lengths of setae ($a_1 = 100$): $b_1 = (305-354)(-387)$, $b_2 = 148(-155)$. These setae subcylindrical, tapering, striate, b_2 curved inwards and converging. The b_1 (1.4-)1.5 times as long as their distance apart; b_2 (0.8-)0.9 of the distance $b_1 - b_2$. Anal plate linguiform, 1.1(-1.2) times as long as broad and with somewhat convex lateral margins and a shallow posteromedian incision; two short, somewhat curved, striate appendages project backwards from the rounded posterolateral corners; appendages 0.5 of the length of plate; plate glabrous.

Etymology. From Greek, *hylekoites* = dweller of woodlands.

Affinities. The species closely resembles the Moroccan *A. angadus* REMY, 1952. It is distinguished from that species by the following characters: tergal antennal branch as long as sternal one in *hylekoites* but 0.8 of that length in *angadus*, antennal seta r proportionately short in *hylekoites* ($r/t = 0.7$), long in *angadus* ($r/t = 1.9$) and on the pygidium the st are tapering and pointed, not clavate; the a_3 is 1.7 times as long as the a_2 , not 3.5. The anal plate is also very similar to that in *A. pusillus* REMY, 1948 from the Ivory Coast but the two species are easily distinguished by the shape of the antennal flagella F_1 , the T_3 and the pygidial setae st and a_3 . There are reasons too to place *A. hylekoites* near a species from the US, *A. junctus* (REMY 1956a), particularly as there are similarities in the general shape of the antennae and the pygidium but they are dissimilar in some important respects: antennal globulus g has conical stalk in *hylekoites*, almost cylindrical in *junctus*; the trichobothria T_3 have large apical swellings in *hylekoites*, not so in *junctus*, and the pygidial setae st are tapering and pointed in *hylekoites*, cylindrical in *junctus*.

Among the Amazonian species *A. hylekoites* may be most close to *A. pachyflagellus* SCHELLER, 1997. There are strong similarities in the shape of the trichobothria and weaker ones in the chaetotaxy of the head and the pygidium. Good distinguishing characters can be found in the antennae (flagellae thick and widened distally in *pachyflagellus*, of normal thickness and not at all widened in *hylekoites*), and in

some collum characters (process very narrow and glabrous and not divided anteriorly, appendages small with hemispherical caps in *pachyflagellus*, process with broader base and incised anteriorly, appendages large and wide with flat caps in *hylekoites*). Moreover, in *pachyflagellus*, the anal plate is broadest anteriorly, the pygidial setae *st* cylindrical and the a_3 of the same length as the a_1 and a_2 .

Genus *Stylopaupoides* REMY, 1956

2. *Stylopaupoides dytanekes* n.sp. (Figs. 12-25)

Type locality. - Brazil, Manaus, Reserva Florestal A. Ducke (02°55'S, 59°59'W), on the Manaus-Itaocatiara highway (AM 010), 26 km north of Manaus, primary upland forest on yellow latosols.

Type material. - Holotype: ad. ♀, locality as above, KEMPSON soil extraction, 6.IX.1983, loc. K31RD, leg. J. Adis et al. Holotype in the INPA collections.

Paratypes: Ibidem, 2 ad. ♀, 9.VIII. 1983, loc. K33RD, leg. J. Adis et al. Paratypes in the INPA collections.

Description

Length. - 1.14(-1.19) mm.

Head. - Tergal setae thin, all cylindrical blunt striate except a_3 of 2nd and a_4 of 4th row which are tapering and pointed; lateral group setae as the mentioned a_4 but longer. Relative lengths of setae, 1st row: $a_1 = 10$, $a_2 = (10-)$ 11; 2nd row: $a_1 = (10-)$ 12, $a_2 = (12-)$ 13(-15), $a_3 = 11$ (-12); 3rd row: $a_1 = (10-)$ 11, $a_2 = 9$; 4th row: $a_1 = (10-)$ 11, $a_2 = (14-)$ 15, $a_3 = 15$ (-17), $a_4 = 10$ (-11); lateral group setae: $l_1 = 18$ (-19), $l_2 = (17-)$ 18, $l_3 = 18$. The ratio a_4/a_1-a_1 is (holotype only) in 1st row 1.5, 2nd row 3.0, 3rd row 3.2 and 4th row 1.9. Temporal organs in tergal view ovoid, their length (0.9 of -) as long as their shortest distance apart. Just inside the posterior margin below the level of l_1 a small aperture in the cuticle and an exterior clavate vesicle; the latter almost 0.4 of the length of temporal organ. Head cuticle and temporal organs glabrous.

Antennae. - Segment 4 with 6 setae, all thin cylindrical blunt except p''' which is tapering pointed glabrous; their relative lengths: $p = 100$, $p' = 84$ (-93), $p'' = 52$ (-55), $p''' = 24$ (-26), $r = (26-)$ 30, $u = 11$ (-13). Tergal seta p is 0.8(-0.9) of the length of tergal branch t . The latter is somewhat fusiform, 3.6(-4.0) times as long as its greatest diameter and about as long as sternal branch s which is 3.0(-3.2) times as long as its greatest diameter and with its posterodistal corner somewhat more truncate than anterodistal one. Seta q cylindrical, faintly striate, pointed, 0.6(-0.7) of the length of s . Relative lengths of flagella (base segments included) and base segments: $F_1 = 100$, $bs_1 = (10-)$ 11(-12); $F_2 = (76)$, $bs_2 = 10$; $F_3 = (85)$, $bs_3 = (13)$. The F_1 (2.4-)2.5 times as long as t , F_2 and F_3 (1.7) and (1.9) times as long as s respectively. Distal calyces glabrous, that of F_1 somewhat flattened, those of F_2 and F_3 conical; flagella axes widened only between calyx and the distal lamella. Globulus g 1.5(-1.6) times as long as wide; 11 bracts, capsule spherical; width of g 0.8(-0.9) of the greatest diameter of t . Antennal segments and s glabrous, t with short pubescence, most distinct on base segment of F_1 .

Trunk. - Setae of collum segment furcate; primary branch foliform with dense somewhat oblique pubescence, secondary branch rudimentary, cylindrical, glabrous. Sublateral setae 1.1 times as long as submedian ones; sternite process triangular, blunt; appendages low and very wide with flat caps; process with short pubescence anteriorly, appendages weakly pubescent.

Setae on tergites I-III as tergal setae on the head, on IV tapering and on V-VI lanceolate; setae on posterior tergites of about the same length as on anterior ones. There are 4+4 setae on tergite I, 6+6 on II-IV, 6+4 on V and 4+2 on VI. Submedian posterior setae on VI 0.6 of their distance apart and about as long as pygidial setae a_j . Relative lengths of trichobothria: $T_1 = 100$, $T_2 = (94-)$ 103, $T_3 = 97$ (-117), $T_4 = (121-)$ 148, $T_5 = (202-)$ 213. They have simple, straight axes which are very thin except in proximal 2/3 of T_3 which are somewhat thickened. Pubescence hairs simple, short, oblique on T_4 and T_5 and on proximal halves of T_3 and on proximal 1/3 of T_1 and T_2 , it is longer, ramose, whorled and erect on distal 1/3 of T_1

and T_2 .

Legs. - Seta on trochanter of leg 9 somewhat longer than seta on coxa of that leg; these setae are furcate, densely pubescent, main branch leaf-shaped, secondary branch thin and very slightly clavate and reaching 0.6-0.7 of the length of main branch. More anteriorly these setae have a proportionately shorter and wider main branch and a rudimentary cylindrical glabrous secondary branch. Tarsus of leg 9 (paratypes only) slender, (4.4-4.6) times as long as its greatest diameter. Proximal seta tapering, pointed, with distinct depressed pubescence; distal seta subcylindrical, annulate, blunt with short oblique pubescence. Proximal seta (0.4) of the length of tarsus and (3.6-3.9) times as long as distal seta. Cuticle of tarsus with very sparse but distinct pubescence on proximal 2/3, denser but short most distally.

Pygidium. Tergum. - Posterior margin rounded but with a median plate-like structure between st : plate 3 times broader than long. Relative lengths of setae: $a_1 = 100$, $a_2 = 110(-143)$, $a_3 = 170(-200)$, $st = 65(-69)$. These setae are curved inwards, the first three tapering pointed and with oblique pubescence, st thin cylindrical blunt and striate. Distance a_1-a_2 , 1.3(-1.5) times as long as a_1 ; distance a_1-a_3 , (3.3-3.6)(-4.1) times as long as distance a_2-a_3 ; distance $st-st$ 1.9(-2.0) times as long as st and about as long as distance a_1-a_2 . Lateral and posterolateral parts of tergum with sparse but distinct pubescence.

Sternum. - Posterior margin between b_1 with distinct indentation with straight bottom. Relative lengths of setae ($a_1 = 100$): $b_1 = 210(-265)$. They are thin, tapering, shortly pubescent, 1.1 times as long as their distance apart. Anal plate 1.7(-1.8) times as long as broad, deeply cleft with the two branches tapering, pointed, curved inwards and covered with a very short almost erect pubescence; proximal part directed obliquely upwards, distal 2/3 directed obliquely downwards.

Etymology. - From Greek *dyo* = two and *taneke* = long-pointed (anal plate).

Affinities. - *S. dytanekes* is not very close to *S. ringueleti* REMY, 1962 from Argentina (REMY 1962) and Chile (SCHELLER 1968), the single species of the genus known previously from the Neotropical region, and its relationships are difficult to trace. The genus is poorly known both taxonomically and from the distributional point of view. The relationships between those 13 species belonging there cannot be resolved at present because most species are unsatisfactorily described and the situation is made worse by their scattered distribution around the southern hemisphere.

In this genus the anal plate is always deeply divided longitudinally, most often by a V-shaped cleft but in the new species the cleft is U-shaped like in some species occurring from tropical Africa including Madagascar to Australia, New Caledonia and New Zealand. Among them the similarity is greatest to *S. delamarei* (REMY) from the Ivory Coast and *S. vadoni* REMY from Madagascar: both have plates with distal appendages.

Subfamily Polypauropodinae

Genus *Polypauropus* REMY, 1932

3. *Polypauropus duckensis* n.sp. (Figs. 26-41)

Type locality. - Brazil, Manaus, Reserva Florestal A. Ducke (02°55'S, 59°59'W), on the Manaus-Itacoatiara highway (AM 010), 26 km north of Manaus, primary upland forest on yellow latosols.

Type material. - Holotype: ad. ♀ (♂), locality as above, KEMPSON soil extraction, 8.IX.1982, loc. K19RD, leg. J. Adis et al. Holotype in the INPA collections.

Paratypes: Same data as holotype, 1 ad. ♀ (♂), 12.II.1983, loc. K16RD; ibidem, 2 ad. ♀ (♂), 11.VII.1983, loc. K17RD; ibidem, 1 ad. ♀ (♂), 6.IX.1983, loc. K28RD. Paratypes in the INPA collections.

Other material. - Ibidem, 1 subad. ♀ (♂), 13.X.1982, loc. K15RD; 1 ad. ♀ (♂), 13.III.1983, loc. K25RD; 1 subad. ♀ (♂), 11.VII.1983, loc. K21RD; 1 ad ♀ (♂), 9.VIII.1983, loc. K21RD and 1 juv. ♀, 6.IX.1983, loc. K32RD, leg. J. Adis et al. Other material in the INPA collections. - In all 10 specimens.

Description

Length. - 1.10(-1.11) mm.

Head. - Tergal and lateral setae of median lengths except a_3 in 2nd row and the two most posterolateral setae which are long. They are thin subcylindrical-cylindrical, densely annulate, all but the most posterolateral ones blunt, the latter pointed. Relative lengths of setae, 1st row: $a_1 = 10$, $a_2 = (17-)$ 19; 2nd row: $a_1 = (9-)$ 11, $a_2 = (11-)$ 12, $a_3 = (25-)$ 31; 3rd row: $a_1 = 9$, $a_2 = (8-)$ 9; 4th row: $a_1 = 12$, $a_2 = (18-)$ 19, $a_3 = (17-)$ 19, $a_4 = (28-)$ 31; lateral group not studied. The ratio a_i/a_1-a_i is in 1st and 2nd rows 0.7(-0.8), in 3rd and 4th rows 0.6(-0.7). Length of temporal organs (0.6-) 0.7 of their shortest distance apart; neither pistil nor posterior pore present. Mediotergal plate with anteromedian broadly V-shaped incision and narrowing posteriorly; it is (3.2-) 3.3 times as long as its greatest breadth. Head cuticle glabrous.

Antennae. - Segment 4 with 4 setae, all blunt and annulate: $p = 100$, $p' = (88-)$ 121, $p'' = 71$ (-93), $r = (23-)$ 36. Tergal seta p 1.5(-1.8) times as long as tergal branch t . The latter short, widest in distal half, (1.3-) 1.5 times as long as its greatest diameter and (0.4-) 0.5 of the length of sternal branch s which is (1.4-) 1.5 (-1.6) times as long as its greatest diameter and with its anterodistal corner truncate. Setae q and q' cylindrical annulate: q about as long as s and 0.7(-0.8) of the length of q' . Relative lengths of flagella (base segments included) and base segments: $F_1 = 100$, $bs_1 = (10-)$ 12; $F_2 = (98-)$ 110(-111), $bs_2 = (9-)$ 11; $F_3 = (78-)$ 80(-96), $bs_3 = 10$. The F_1 (5.7-) 6.2 (-6.9) times as long as t , F_2 and F_3 (2.6-) 2.8 and 2.2(-2.4) times as long as s respectively. Distal calyces with 6 bracts and of similar structure as the globuli of s ; those of F_1 short conical with broad base of the capsule, those of F_2 and F_3 ovoid. Length of globuli of sternal branch (stalks included) (2.3-) 2.7 (2.8) times as long as greatest diameter and (0.6-) 0.7 of the length of s ; distal globulus at least twice larger than proximal one and its diameter 0.7(-0.8) of the greatest diameter of t . Antennae glabrous except t and bs_i , which have a short pubescence.

Trunk. - Setae of collum segment simple, somewhat clavate, blunt, annulate; sublateral one 1.2(-1.4) times as long as submedian one; sternite process broadly triangular, rounded anteriorly; appendages with broad base and flat 4-parted caps; process and basal part of appendages with short pubescence.

Setae on tergites of medium length, subcylindrical, blunt, annulate. There are 4+4 setae on tergite I, 6+6 on II-IV, ? on V, 6+2 on VI. Length of submedian posterior setae on VI 0.2 of their distance apart and (0.5-) 0.6 of the length of pygidial a_1 .

Trichobothria with straight simple axes; pubescence hairs simple, oblique on proximal 1/3 of T_1 , T_4 and proximal half of T_5 , almost erect for the rest. Relative lengths of trichobothria: $T_1 = 100$, $T_2 = 121$ (-128), $T_3 = (150-)$ 161(-164), $T_4 = (153-)$ 161(-165), $T_5 = 153$ (-163). Penes (paratype only) subconical, 2.1 times as long as their greatest diameter; distal seta 0.4 of the length of organ; penes glabrous.

Legs. - All legs 5-segmented. Setae on coxa and trochanter of legs 1-9 of the same length, simple, cylindrical, striate, blunt. Tarsus of leg 9 tapering, (3.0-) 3.2 times as long as its greatest diameter. Proximal seta cylindrical, with short oblique pubescence; its length 0.3 of the length of tarsus and 1.5(-1.6) times as long as distal seta which is somewhat clavate, annulate. Tarsus with minute pubescence.

Pygidium. Tergum. - Posterior margin almost straight, very small bulge posterior of a_1 . All setae except t_i thin, tapering, pointed, t_i triangular in tergal view, a_1 and t_i with distinct, other setae with very short pubescence in distal part. The a_1 somewhat curved outwards, a_2 and st curved inwards but diverging, a_2 straight and diverging. Relative lengths of setae: $a_1 = 100$, $a_2 = 120$, $a_3 = (80-)$ 92, $st = (467-)$ 534, $t_i = 40$. Distance a_1-a_1 1.1 of the length of a_1 ; distance a_1-a_2 3.9(-4.0) times as long as distance a_2-a_2 ; distance $st-st$ as long as (-1.2) times as long as st and (4.0-) 4.3 times as long as distance a_1-a_1 . Cuticle with short pubescence.

Sternum. - Posterior margin with median roundly V-shaped indentation, posterolateral corners rounded. Relative lengths of setae ($a_1 = 100$): $b_1 = 230$, $b_2 = 73$ (-92), $t_2 = 46$ -53(-56). The b_1 as a_1 of pygidial tergum but thinner, b_2 somewhat thicker. The b_1 as long as (-1.5 times as long as) their distance apart; b_2 0.5(-0.6) of distance b_1-b_2 . The t_2 distinctly larger than t_1 . Anal plate represented by two posteriorly directed stalked lamelliform setae; distal part subcircular, outer margin almost straight, inner margin strongly curved; they are set with erect pubescence which is strongest on inner side.

Etymology. A latinization of Ducke alluding to the collecting site in Reserva Florestal A. Ducke.

Affinities. The new species is clearly distinguished by the large size and asymmetrical shape of the

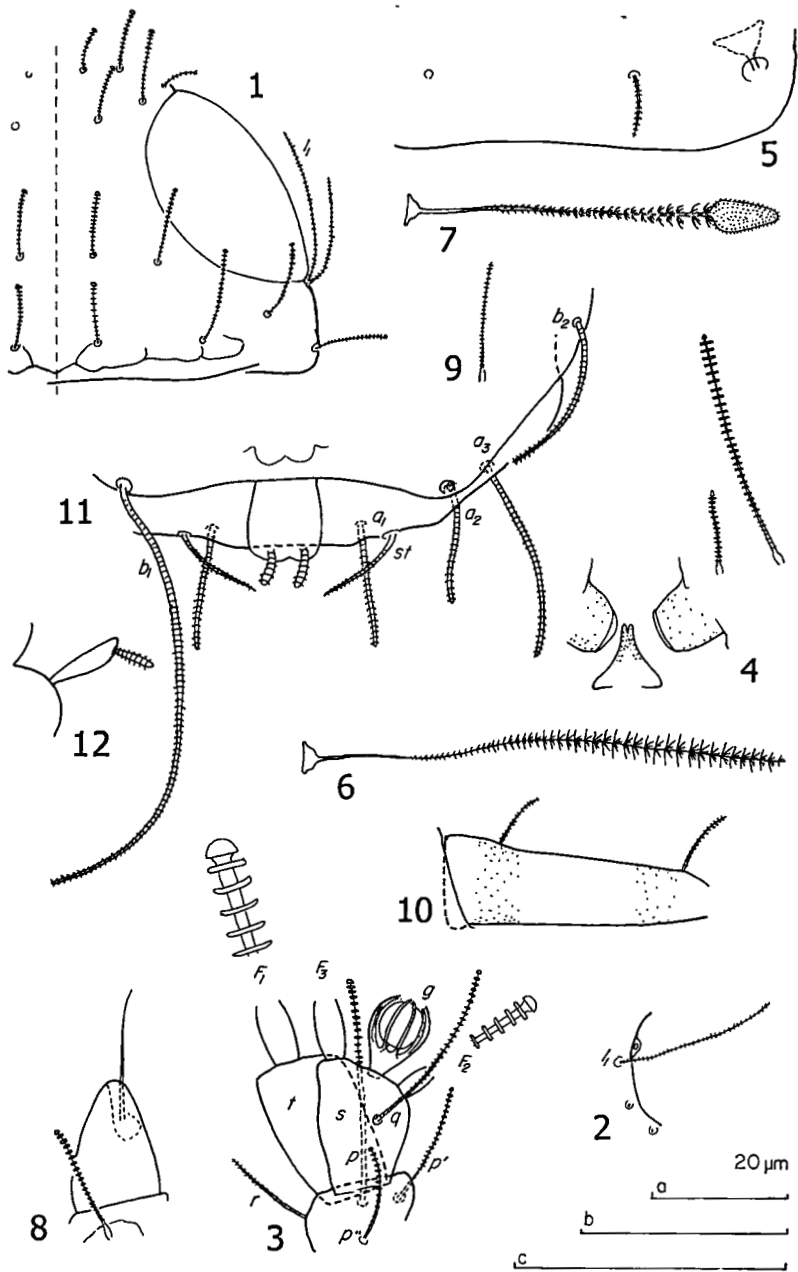
pygidial setae t_2 and by the almost straight outer margin of the anal plate setae. Among the 13 species described the first character is also found in *P. murphyi* REMY from Gambia (REMY 1958b) but the general shape of the anal plate, the shape of the tergal antennal branch and the setae a_1 , a_2 and a_3 of the pygidial tergum are dissimilar. There are some affinities also to *P. afrioccidentalis* SCHELLER from Sierra Leone (SCHELLER 1995) in some antennal characters (the shape of the globulus g and the calyces of the flagella), the collum process, the collum setae and the trichobothria. Good separating characters are the shape of the temporal organs (very narrow in tergal view in *duckensis*, almost circular in *afrioccidentalis*), the shape of the collum appendages (caps flat and divided, not rounded with distinct collar) and the shape of the pygidial setae t_1 and t_2 (short-stalked, not long-stalked). Among the Central Amazonian species it may be most close to *P. tropicus* SCHELLER.

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Table 1: Genera and subgenera of Pauropoda in the Nearctic, Brazil and tropical Africa.

Family and genus	Subgenus	Nearctic	Brazil	Tropical Africa
Millotauropodidae				
<i>Millotauropus</i>		-	+	+
Pauropodidae				
<i>Allopauropus</i>	<i>Allopauropus</i>	+	+	+
	<i>Decapauropus</i>	+	+	+
	<i>Perissopauropus</i>	-	+	+
<i>Pauropus</i>		+	-	+
<i>Stylopauropus</i>	<i>Stylopauropus</i>	+	-	+
	<i>Donzelotauropus</i>	+	-	-
	<i>Propepauropus</i>	+	-	-
<i>Stylopauropoides</i>		-	+	+
<i>Hemipauropus</i>		-	+	+
<i>Cauvetauropus</i>	<i>Cauvetauropus</i>	-	+	+
	<i>Nesopauropus</i>	-	-	+
<i>Monodauropus</i>		-	-	+
<i>Scleropauropus</i>	<i>Scleropauropus</i>	+	+	+
	<i>Scleropauropoides</i>	-	-	+
	<i>Scleropauropopsis</i>	-	-	+
<i>Colinauropus</i>		-	-	+
<i>Fagepauropus</i>		+	-	+
<i>Polypauropoides</i>		+	+	+
<i>Polypauropus</i>		+	+	+
<i>Amphipauropus</i>		+	-	-
<i>Diplopauropus</i>		+	-	-
Afrauropodidae				
<i>Afrauropus</i>		-	-	+
Brachypauropodidae				
<i>Brachypauropus</i>		+	-	-
<i>Atetopauropus</i>		+	-	-
<i>Zygopauropus</i>		+	-	-
<i>Deltopauropus</i>		+	-	-
<i>Panamauropus</i>		+	-	+
Eurypauropodidae				
<i>Eurypauropus</i>		+	-	-
<i>Samarangopus</i>		-	-	+
<i>Sphaeropauropus</i>		-	-	+
Total number of genera		15	8	17



Figs. 1-12:

Allopauropus (Decapauropus) hylekoites n.sp., holotype.

1: Head, median and right part, tergal view. 2: Temporal organ, posterior part, right side, lateral view.

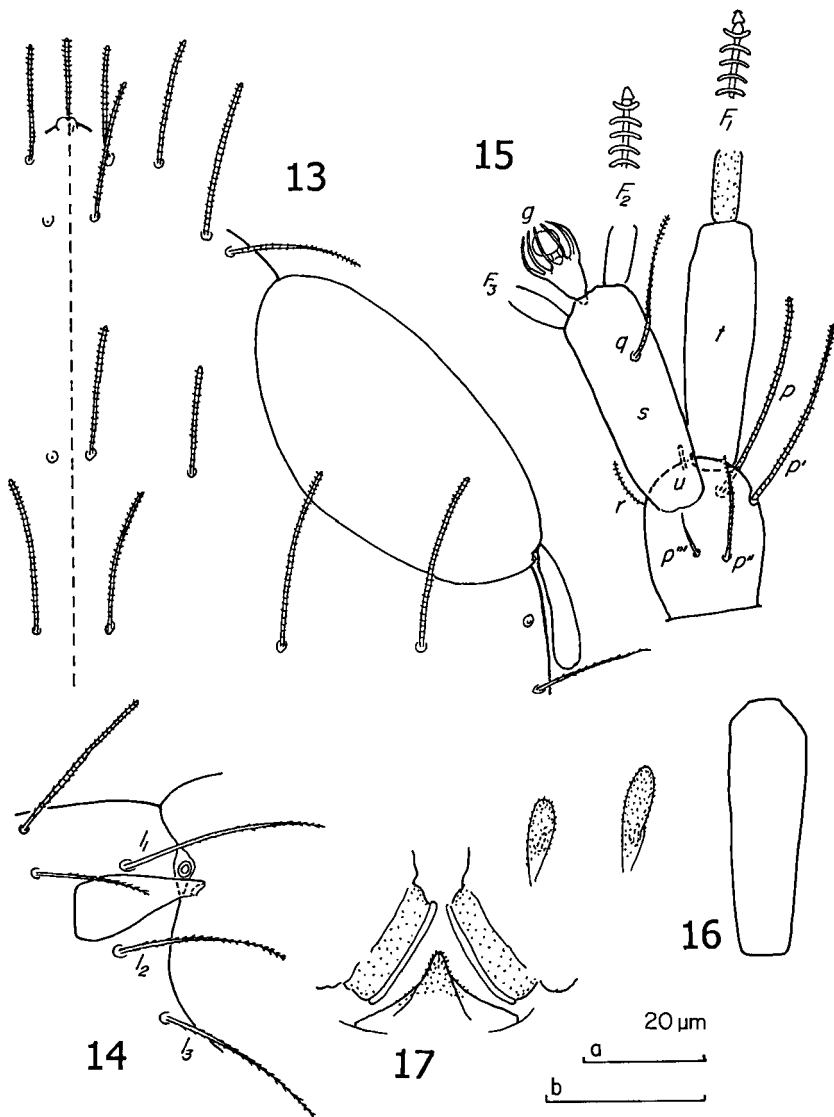
3: Right antenna, sternal view. 4: Collum segment, median and left part, sternal view. 5: Tergite VI,

posteromedian part and right posterolateral corner. 6: T_1 . 7: T_3 . 8: Left penis and seta on coxa of leg 2,

anterior view. 9: Seta on coxa of leg 9. 10: Tarsus of leg 9. 11: Pygidium, posterior and left part, sternal

view. 12: Anal plate, lateral view. Pubescence only partly drawn in 10.

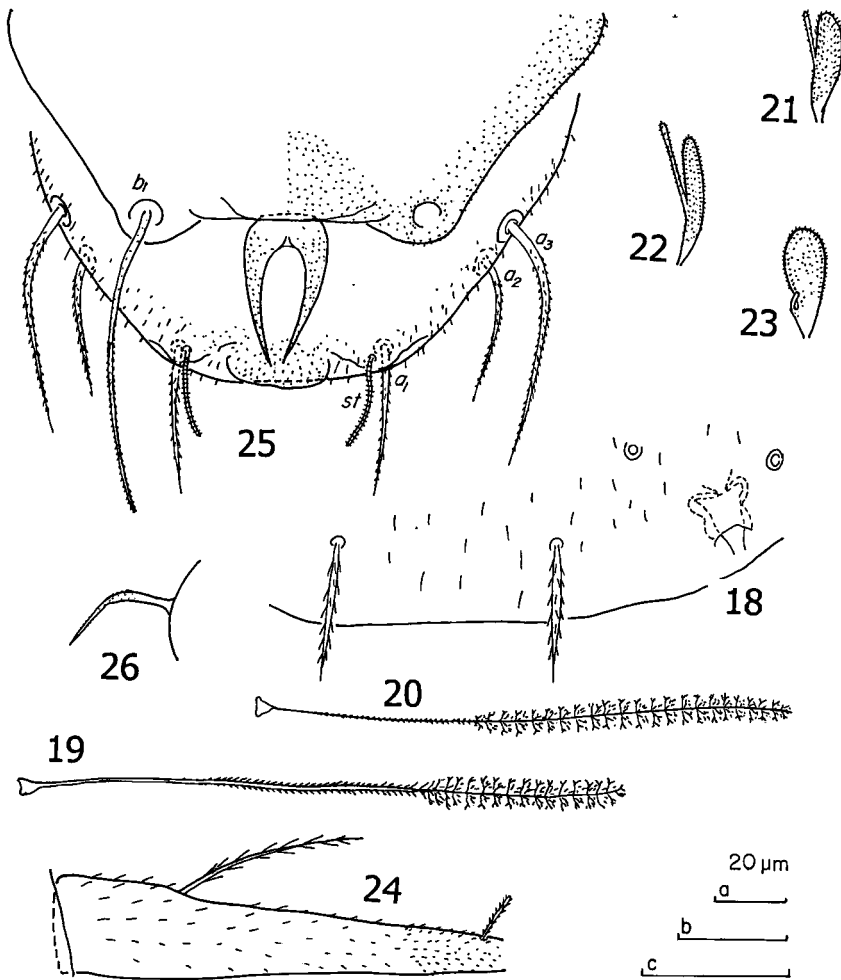
Scale a: 6, 7, 8; b: 1, 2, 4, 5, 9, 10; c: 3, 11, 12.



Figs. 13-17:

Stylopauropoides dytanekes n.sp., holotype.

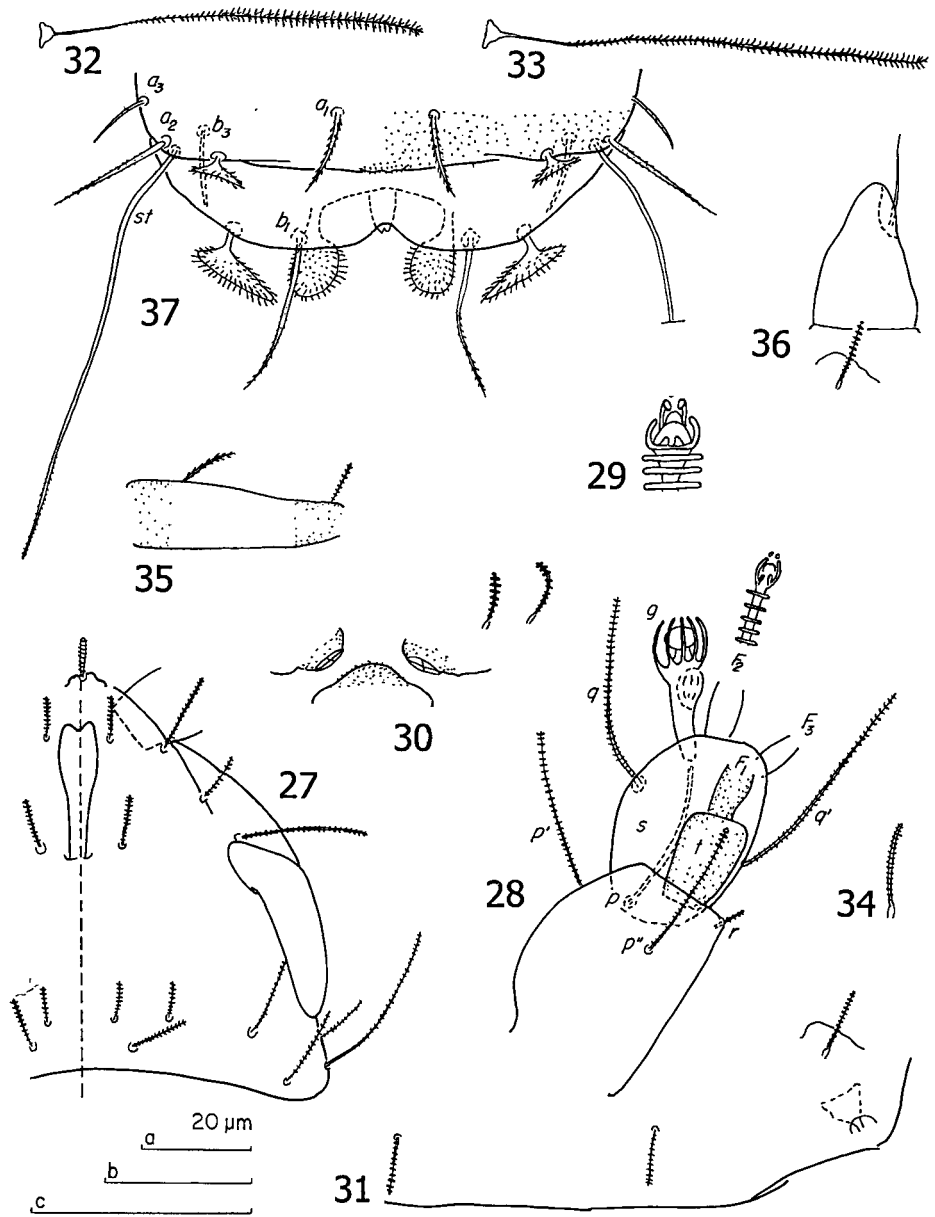
13: Head, median and right part, tergal view. 14: Temporal organ, right side, posterior part with external bladder, pore and lateral group setae. 15: Right antenna, sternal view. 16: Sternal antennal branch, right side, tergal view. 17: Collum segment, median and left part, sternal view. Scale a: 17; b: 13-16.



Figs. 18-26:

Stylopaupoides dytanekes n.sp., holotype.

18: Tergite VI, posteromedian part and right posterolateral corner. 19: T_7 . 20: T_3 . 21: Seta on coxa of leg 9. 25: Pygidium, posterior part, sternal view. 26: Anal plate, lateral view. Pubescence only partly drawn in 25. Scale a: 19, 20; b: 21-24; c: 18, 25, 26.



Figs. 27-37:

Polypauropus duckensis n.sp. 27-28, 30-37 holotype, 29 paratype ad. 10(♀).

27: Head, median and right side, tergal view. 28: Right antenna, tergal view. 29: Flagellum F_1 , apical part. 30: Collum segment, median and left part, sternal view. 31: Tergite VI, posteromedian part and right posterolateral corner. 32: T_1 . 33: T_1 . 34: Seta on trochanter of leg 9. 35: Tarsus of leg 9. 36: Right penis and seta on coxa of leg 2, lateral view. 37: Pygidium, posterior part, tergal view. Pubescence only partly drawn in 35 and 37. Scale a: 27, 30, 32-36; b: 31, 37; c: 28.