

New and rare Schizomida (Arachnida: Hubbardiidae) from South America

by

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Abstract

One new genus and eight new species of Schizomida are described from South America: *Adisomus duckei* n.g., n.sp. from Brazil, *Rowlandius sul* n.sp. from Brazil, *Surazomus arboreus* n.sp. from Brazil, *S. manaus* n.sp. from Brazil, *S. mirim* n.sp. from Brazil, and *S. rodriguesi* n.sp. from Brazil; *Hansenoehrus guyanensis* n.sp. from Guyana; and *Surazomus boliviensis* n.sp. from Bolivia. New records of *Surazomus brasiliensis* (KRAUS) are included and the female genitalia are illustrated.

Resumo

Um gênero novo e oito espécies novas de Schizomida são descritas da América do Sul: *Adisomus duckei* n.g., n.sp. do Brasil, *Rowlandius sul* n.sp. do Brasil, *Surazomus arboreus* n.sp. do Brasil, *S. manaus* n.sp. do Brasil, *S. mirim* n.sp. do Brasil, *S. rodriguesi* n.sp. do Brasil; *Hansenoehrus guyanensis* n.sp. da Guiana; e *Surazomus boliviensis* n.sp. da Bolívia. Novos registros para *Surazomus brasiliensis* (KRAUS) são incluídos e as genitalias das fêmeas ilustradas.

Keywords: Schizomida, Taxonomy, Amazon, Bolivia, Brazil, Guyana.

Introduction

The schizomid fauna of South America is poorly known with only 16 species in five genera having been described. REDDELL & COKENDOLPHER (1995) include a complete bibliography, synonymies, and records for all South American described and undescribed species reported in the literature and available for examination prior to that date. The only species described as new since that study is *Surazomus chavin* PINTO-DA-ROCHA (1996) from Peru. TOURINHO & KURY (1999) also recorded an introduced population of *Stenoehrus portoricensis* CHAMBERLIN from Rio de Janeiro.

The present paper adds an additional new genus and eight new species. Undescribed species are also known from Colombia, Ecuador, Peru, Surinam, and Venezuela, but these will not be described in the present publication. Doubtless, numerous additional species await discovery.

Most of the material covered by this report was obtained by JOACHIM ADIS and colleagues during intensive investigations of the terrestrial arthropod fauna of Amazonia, Brazil. For descriptions of collection methods, localities, and habitats see ADIS (1981); ADIS et al. (1987a, 1987b).

Methods

The numbering of the setae and teeth on the chelicerae follows that illustrated by REDDELL & COKENDOLPHER (1995). The importance of these meristic characters has not been established. We have listed all of the data so that these will be available when a critical analysis is performed. It is already obvious that there is considerable variation in the smaller accessory teeth and lamella of the movable digit found in New World species. The numbering of the setae on the male flagellum follow that of HARVEY (1992) as modified by COKENDOLPHER & REDDELL (1992).

All measurements are in mm. Uncertainties about the state of character or a measurement (due to damaged or poorly preserved specimens) are noted by listing the data followed by a question mark in parentheses. Acronyms used in recording the collection sites/traps are as follows: BR = Biological Reserve INPA/SUFRAMA, CAP = capoeirã (secondary upland forest), CPA = Campinarana (primary whitesand forest), INPA = INPA Campus (secondary upland forest), Manaus, K = Kempson soil extraction, LJ = Lago Janauari, RD = Reserva Florestal A. Ducke, TM = Tarumã Mirim. OTU of ROWLAND (1975) = operational taxonomic unit.

Holotypes of the Brazilian species obtained by J. ADIS and colleagues are deposited in the Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Brazil. The remaining material is largely divided between that institution and the Max-Planck-Institut für Limnologie, Plön, Germany. The depositories for other material are as follows: American Museum of Natural History, New York (AMNH), California Academy of Sciences, San Francisco (CAS), and Texas Memorial Museum, The University of Texas at Austin (TMMC).

Adisomus n.gen.

Diagnosis: Anterior process of propeltidium with two setae (one behind the other); corneate eyes absent; metapeltidium entire; abdominal tergite II with two posterior setae; body without clavate setae; male abdomen not elongated; male without posterodorsal abdominal process on segment XII; male flagellum dorsoventrally flattened, spade-shaped without significant dorsal relief; pedipalps not sexually dimorphic; male pedipalps monomorphic, without armature except for mesal spur and pointed anteriorly-directed tubercle on trochanter and pointed tubercle on ventromesal margin of femur; movable cheliceral digit with small accessory teeth, guard tooth present; anterodorsal margin of femur IV produced at about a 90° angle; female flagellum with four segments; spermathecae with one pair long slender curved stalks bearing indistinct bulbs with terminal pores.

Etymology: The name is a patronym honoring Dr. Joachim ADIS in recognition of his vast contributions to our knowledge of the fauna of Amazonian rain forests.

Type-species: *Adisomus duckei* n.sp.

Comments: The single pair of long, curved spermathecal stalks separates this genus from all others. Males may be separated from those of *Surazomus* by the unmodified pedipalps and the shape and lack of dorsal relief on the flagellum.

Adisomus duckei n.sp. (Figs. 1-4)

Undescribed species of a new genus: ADIS et al., 1999: 205, 207.

Type-data: BRAZIL: Edo. Amazônia: Reserva Florestal A. Ducke, 27 October 1987 (J. ADIS et al.) (K13-RD); primary upland forest (terra firme); Kempson soil extraction, male holotype; 10 May 1983 (J. W. DE MORAIS, J. ADIS) (K23-RD9); 10 May 1983, (K23-RD9), female allotype; 13 March 1981 (J. ADIS et al.) (K10-Res Ar), female paratype; 6 Sept. 1983 (J. ADIS et al.) (K15-RD13), male paratype; (K23-RD13), female paratype (TMMC); 9 August 1983 (J. W. DE MORAIS, J. ADIS) (K17-RD12), male paratype; 4 January 1987 (J. ADIS et al.) (TMMC); female paratype; (K13-RD), female paratype.

Etymology: The species is a patronym honoring Adolfo DUCKE, the distinguished Swiss botanist for whom the Reserva Ducke is named.

Diagnosis: Same as for genus.

Description: Holotype male 2.62 long. Light orangish-brown but partially cleared in preservative.

Cephalothorax: Propeltidium 0.84 long, 0.44 wide; with row of two setae on anterior process and three (?) pairs of dorsal setae. Eyespots absent. Metapeltidium entire.

Abdomen: Tergites I-VIII with one pair large dorsal setae each; tergite IX with one pair large dorsolateral and one pair small lateral setae. Segment XII without posterodorsal process. Flagellum (Figs. 2-4) dorsoventrally flattened, spade shaped.

Chelicerae: Fixed digit with 6 smaller denticles on and between the two primary teeth. Movable digit: serrula with 15 teeth; guard tooth present; with 3 small short, plus 2 tiny accessory teeth (similar to REDDELL & COKENDOLPHER, 1995: Fig. 19). Setae: 1 = 3, 2 = 3, 3 = 3, 4 = 5 long dorsally, 1 short ventrally, 5 = 7, 6 = 1.

Pedipalps (Fig. 1): Trochanter projected to triangular knob tipped with a strong pointed tubercle and strong seta, with mesal spur; femur with strong pointed tubercle on ventromesal margin; other segments unmodified.

Legs: Leg I, including coxa, 3.4 long; tarsal segment proportions: 12:2:3:3:3:8. Anterodorsal margin of femur IV produced at about 90° angle; about 2 times as long as deep.

Measurements: Pedipalp: trochanter, 0.10; femur, 0.46; patella, 0.38; tibia, 0.30; tarsus, 0.20; total, 1.44. Leg I: trochanter, 0.20; femur, 0.68; patella, 0.82; tibia, 0.66; tarsus, 0.68; total, 3.04. Leg II: trochanter, 0.16; femur, 0.44; patella, 0.28; tibia, 0.34; basitarsus, 0.28; telotarsus, 0.28; total, 1.78. Leg III: trochanter, 0.14; femur, 0.46; patella, 0.26; tibia, 0.24; basitarsus, 0.30; telotarsus, 0.26; total, 1.66. Leg IV: trochanter, 0.24; femur, 0.78; patella, 0.32; tibia, 0.52; basitarsus, 0.44; telotarsus, 0.34; total, 2.64.

Female paratype (K13-RD, 1 April 1987): As in male except as follows: Propeltidium, 0.84 long, 0.40 wide; total length, 2.92. Flagellum 0.22 long, with four segments. Leg I, including coxa, 3.28; tarsal segment proportions: 9:2:3:3:3:4:8. Femur IV about 2.5 times as long as deep.

Chelicerae: Fixed digit with 7 smaller denticles on and between the two primary teeth. Movable digit: serrula with 16 teeth and 3 small short accessory teeth. Setae: 3 = 4, 4 = 6 long dorsally, 2 short ventrally.

Spermathecae (Fig. 5): with a single pair of elongate stalks without greatly enlarged bulbs. A faint indication of a gonopod was observed in one specimen; better-preserved material will be needed to ascertain the condition for certain.

Measurements: Pedipalp: trochanter, 0.10; femur, 0.40; patella, 0.32; tibia, 0.28; tarsus, 0.20; total, 1.30. Leg I: trochanter, 0.18; femur, 0.68; patella, 0.76; tibia, 0.60; tarsus, 0.66; total, 2.88. Leg II: trochanter, 0.14; femur, 0.52; patella, 0.32; tibia, 0.30; basitarsus, 0.26; telotarsus, 0.30; total, 1.84. Leg III: trochanter, 0.12; femur, 0.46; patella, 0.20; tibia, 0.24; basitarsus, 0.28; telotarsus, 0.26; total, 1.56. Leg IV: trochanter, 0.28; femur, 0.74; patella, 0.38; tibia, 0.50; basitarsus, 0.40; telotarsus, 0.36; total, 2.66.

Comments: All specimens were cleared by the preservative so that it was not possible to reliably determine the setation of the propeltidium. Setae on the abdomen of some specimens could also not be reliably counted so it is not possible to meaningfully discuss variation in these characters.

Hansenoehrus guyanensis n.sp. (Figs. 7-9)

Schizomus sp., OUT No. 1 [*simonis* group]: ROWLAND 1975: 53-54, 101-103, 106, 120-121, 124-125, 357-359, map 2, figs. 106, 290; ROWLAND & REDDELL 1979b: 89, 91-94, 98, figs. 1, 21.

Schizomus sp., OUT No. 2 [*simonis* group]: ROWLAND 1975: 53-54, 101-106, 120-121, 124-125, 357-359, map 2, figs. 104-105, 290; ROWLAND & REDDELL 1979b: 89, 91-94, 98, figs. 1, 19-20.

New genus 1 and new species: REDDELL & COKENDOLPHER 1995: 19.

New genus No. 1, new species: REDDELL & COKENDOLPHER 1995: 56, 150, Fig. 36.

Hansenoehrus sp.: REDDELL & COKENDOLPHER 1995: 19, 71.

Type-data: GUYANA (British Guiana): Kartabo, 1919 (A. EMERSON), holotype female (AMNH); female paratype (AMNH); 6 May 1924 (collector ?), female paratype; Atkinson Field, 8 February 1959 (B.G.), in soft fallen rotten log in low forest, female paratype (AMNH).

Etymology: The species is named for Guyana, the country of origin.

Diagnosis: *Hansenoehrus trinidadus* (ROWLAND & REDDELL) and the new species are the only members of the genus currently recognized that have two pair of short spermathecal lobes; they differ by the width and spacing of the lobes: more closely spaced (bases touching), broader spermathecal lobes (Figs. 7-9) in *H. guyanensis* (cf. REDDELL & COKENDOLPHER, 1995, Fig. 56). The new species and *H. drakos* (ROWLAND & REDDELL) differ from all other members of the genus by the presence of three pairs (two pairs in others) of propeltidial setae (see below under comments). *Hansenoehrus trinidadus* and *H. drakos* are known from Trinidad and Guyana, respectively.

Description: Holotype female about 4.6 long (abdomen detached); brown but probably discolored by preservative.

Cephalothorax: Propeltidium 1.14 long, 0.60 wide; with row of two setae on anterior process and three pairs of dorsal setae. Eyespots indistinct. Metapeltidium entire.

Abdomen: Tergites I-VIII with one pair dorsal setae; tergite IX one pair dorsolateral and one pair lateral setae. Flagellum with four segments; 0.52 long.

Spermathecae (Figs. 7-9) with two pairs of short, wide lobes, median pairs slightly shorter than lateral pairs; gonopod apparently absent.

Chelicerae: Fixed digit with 3 smaller denticles on and between the two primary teeth. Movable digit: serrula with 18 teeth; guard tooth present; lamella present. Setae: 1 = 3, 2 = 3, 3 = 3, 4 = 7 long dorsally, 2 short ventrally, 5 = 7, 6 = 1.

Pedipalps: Trochanter not produced ventrodorsally; other segments without armature.

Legs: Leg I, including coxa, 5.26 long; tarsal segment proportions: 15:2:4:4:3:4:9. Anterodorsal margin of femur IV produced at about 90° angle. Femur IV about 2.5 times as long as deep.

Measurements: Pedipalp: trochanter, 0.16; femur, 0.54; patella, 0.58; tibia, 0.48; tarsus, 0.24; total 2.0. Leg I: trochanter, 0.30; femur, 1.18; patella, 1.44; tibia, 1.00; tarsus, 0.84; total, 4.76. Leg II: trochanter, 0.20; femur, 0.84; patella, 0.48; tibia, 0.46; basitarsus, 0.40; telotarsus, 0.34; total, 2.72. Leg III: trochanter, 0.18; femur, 0.66; patella, 0.34; tibia, 0.36; basitarsus, 0.52; telotarsus, 0.42; total, 2.48. Leg IV: trochanter, 0.32; femur, 1.16; patella, 0.50; tibia, 0.78; basitarsus, 0.70; telotarsus, 0.52, total, 3.98.

Comments: The presence of a lamella on the movable digit of the chelicera is like that found in *Rowlandius* and is up to this time not recorded for *Hansenoehrus*. Because this character has not been studied in a wide variety of species, it is uncertain what value to place on it. ROWLAND (1975) and later ROWLAND & REDDELL (1979b) listed the specimens (treated herein as types) from three localities. Their OTU No. 1 was from Atkinson Field and OTU No. 2 was from "Bartica District" and "Kartabo 1". Re-examination of the collection labels reveals that the data for the No. 2 specimens are incomplete/incorrect. On the back of the label bearing "Bartica District" is written "Kartabo" and the "1" following Kartabo in the second label is not present. Kartabo and Atkinson Field are both in the lowlands within 50 km of the coast. The two localities are slightly less than 50 km apart; Kartabo near the lower Essequibo River and Atkinson Field near the lower Demerara River. It is possible that this species represents the female of *H. drakos*, which is known only by a male. The presence of four setae on tergite VIII of *H. drakos*, versus two on *H. guyanensis* serves to separate the two species, but this is frequently a variable

character. *Hansenoehrus drakos* is definitely known only from a single male collected at Kartabo.

The spermathecae as illustrated by ROWLAND (1975) and later copied by ROWLAND & REDDELL (1979b) and REDDELL & COKENDOLPHER (1995) are misleading; so much so that the latter authors listed this species in two different genera. In reality, ROWLAND mistook the sac-like structure at the base of the spermathecae trunk to be a sclerotized structure, which he called the "basal piece." The variation, which ROWLAND observed in the basal piece, suggested to him that "It is possible that these two collections represent different, though closely related species." Based on ROWLAND's drawings, REDDELL & COKENDOLPHER (1995) stated that "The broad truncate spermathecal lobes and sclerotized basal piece preclude the placement of this species in any known genus. It is apparently closely related to *Hansenoehrus*." In fact, the only character stated to separate this genus from *Hansenoehrus* was the presence of the sclerotized basal piece. This same character was also the reason OTU No. 1 and OTU No. 2 were considered separate species. Our recent examination of the specimens reveals that the basal piece is actually only the tube-like structure, which connects the truncus of the spermathecae to the genital atrium. This tube is generally clear and difficult to observe. The genitalia are complex 3-dimensional structures which are difficult to examine and even harder to illustrate. Apparently, the "basal pieces" were almost fully extended and possibly filled with some material which made it appear darker than in other specimens in Fig. 105 in ROWLAND (1975) (copied in ROWLAND & REDDELL 1979b: Fig. 20; REDDELL & COKENDOLPHER 1995: Fig. 36). That same specimen is herein re-illustrated in Fig. 8. The spermathecae are ventral with the truncus connecting near the secretory glands. From our examinations, it is not clear if the truncus passes through the gland or connects at the level of the gland. When observed on a microscope slide, the glands appear to be dorsoventrally compressed, but this could be an artifact of the mounting/observation procedure. The "basal piece" of ROWLAND are tubes which connect dorsally at or near the dorsum of the secretory glands. We are not certain if the truncus of the spermathecae open directly into the tube. These tubes apparently run from the atrium to the truncus/secretory gland junction. Because the level of the genital atrium is only slightly higher than the level of the truncus, it appears that the tubes arch dorsally somewhat between these two points. The reduced "basal piece" observed by ROWLAND (1975: Fig. 104) (copied by ROWLAND & REDDELL 1979b: Fig. 19) in another specimen is re-illustrated herein as Fig. 9. In this case the tube is not filled with darker material and is not evident except above the truncus. Only by focusing the microscope above the plane of the secretory glands is the end of the tube evident in cross-section. The tube rises more abruptly than in the previous specimen. This is presumably what ROWLAND saw and illustrated (1975: Fig. 106). This condition is similar to that which is seen in the specimen of OTU No. 1. Although not illustrated by ROWLAND, the base of the tube can be seen above the truncus on the right side of the genitalia in this specimen (Fig. 7). The base of the tube on the left side as well as the anterior portions of the secretory glands are not evident in this specimen. The truncated ends of the spermathecae of OTU No. 2 as illustrated by ROWLAND (1975: figs. 104-105) are in error. Apparently, ROWLAND saw the pore opening on the end and exaggerated this structure. The same pores are evident on the specimen from Atkinson Field, which ROWLAND illustrated (1975: Fig. 106) with rounded lobes.

***Rowlandius sul* n.sp. (Fig. 6)**

Hubbardiinae, undetermined material: REDDELL & COKENDOLPHER 1995: 40 [part. Belém record only].

Type-data: BRAZIL: Pará: Belém, 17 March 1965 (C.E. & L.S. ROSS), female holotype (CAS).

Etymology: The name is a Portuguese noun in apposition meaning south, this species being the southernmost known member of the genus.

Diagnosis: Up to the present, all members of this genus were known only from islands in the West Indies. The new species is similar to *R. peckorum* (ROWLAND & REDDELL), *R. cousinensis* (ROWLAND & REDDELL) from Jamaica, and *R. insignis* (Hansen) from Martinique in that each has greatly elongated lateral lobes of the spermathecae which end in greatly enlarged bulbs and short unenlarged

median lobes (ROWLAND & REDDELL, 1979a: figs. 68-71). *Rowlandius sul* differs from these species by having the median lobes much shorter and wider (cone-like).

Description: Holotype female 2.7 long; orangish-brown.

Cephalothorax: Propeltidium 0.92 long, 0.40 wide; anterior process produced to sharp point; with 2 setae in row on anterior process and three (?) pair dorsal setae. Metapeltidium entire.

Chelicerae: Fixed digit with 5 smaller denticles on and between the two primary teeth. Movable digit: serrula with 16 teeth; guard tooth present; without accessory teeth but with slight lamella. Setae: 1 = 3, 2 = 4, 3 = 4, 4 = 5 long dorsally, 2 short ventrally, 5 = 7, 6 = 1.

Pedipalps: Trochanter slightly produced to rounded margin ventrodistally; other segments unmodified.

Abdomen: Tergites I-VIII with one (?) pair lateral setae each; tergite IX with one pair dorsolateral and one pair small lateral setae. Flagellum with four segments.

Spermathecae (Fig. 6): With two pairs of lobes. The lateral lobes have long curved stalks with distinct terminal ovate bulbs; the median lobes are short and cone-shaped. Gonopod absent.

Legs: Leg I, including coxa, 3.54 long; tarsal segment proportions: 12:2:3:3:3:6. Anterodorsal margin of femur IV produced at about 90° angle; about 2 times as long as deep. Left legs I and III lost except for trochanter.

Measurements: Pedipalp: trochanter, 0.14; femur, 0.36; patella, 0.38; tibia, 0.36; tarsus, 0.20; total, 1.44. Leg I: trochanter, 0.24; femur, 0.74; patella, 0.86; tibia, 0.66; tarsus, 0.64; total, 3.14. Leg II: trochanter, 0.14; femur, 0.58; patella, 0.28; tibia, 0.32; basitarsus, 0.32; telotarsus, 0.32; total, 1.96. Leg III: trochanter, 0.12; femur, 0.54; patella, 0.26; tibia, 0.26; basitarsus, 0.32; telotarsus, 0.28; total, 1.78. Leg IV: trochanter, 0.22; femur, 0.76; patella, 0.36; tibia, 0.56; basitarsus, 0.52; telotarsus, 0.36; total, 2.78.

Comments: This specimen was heavily stained by materials absorbed into the alcohol from the red stopper used to seal the vial, making an accurate count of setation and eyespot presence or absence uncertain.

Surazomus arboreus n.sp. (Figs. 10-15)

Uropygi: ADIS 1981: 107, 109, 114, 154-156 [part].

Type-data: BRAZIL: Edo. Amazônia: Rio Tarumã Mirim, blackwater inundation forest (Igapó) (J. ADIS), 2 Sept. 1976 (51D-TM), arboreal photo-electors directed upward, male holotype; 16 August 1976 (50D-TM), female allotype; 4 Aug. 1976 (51C-TM), 1 male paratype; 4 Aug. 1976 (51D-TM), 1 male paratype; 16 Aug. 1976 (47B-TM), 1 male paratype; 16 Aug. 1976 (50A-TM), 3 male paratypes; 16 Aug. 1976 (50C-TM), 1 male paratype; 16 Aug. 1976 (51B-TM), 1 male paratype; 16 Aug. 1976 (51C-TM), 1 male paratype; 2 Sept. 1976 (50A-TM), 5 male paratypes; 2 Sept. 1976 (50C-TM), 5 male paratypes; 2 Sept. 1976 (50D-TM), 3 male paratypes; 2 Sept. 1976 (51B-TM), 1 male paratype; 16 Sept. 1976 (47D-TM), 1 male paratype; 16 Sept. 1976 (50A-TM), 7 male paratypes; 16 Sept. 1976 (50B-TM), 8 male paratypes; 16 Sept. 1976 (50C-TM), 7 male paratypes (TMMC); 16 Sept. 1976 (50D-TM), 5 male paratypes; 16 Sept. 1976 (51B-TM), 1 male paratype; 16 Sept. 1976 (51D-TM), 3 male paratypes; 16 Sept. 1976 (51E-TM), 1 male paratype; 30 Sept. 1976 (50A-TM), 3 male paratypes; 30 Sept. 1976 (50C-TM), 1 male paratype; 13 May 1983 (E13-TM), 1 female paratype (TMMC).

Lago Janauari, mixedwater inundation forest (J. ADIS et al.) 31 May 1988 (BEDown-50D), 1 female paratype.

Other records: BRAZIL: Edo. Amazônia: Rio Tarumã Mirim, blackwater inundation forest (Igapó) (J. ADIS), 31 March 1976 (47B-TM), 1 male; 16 Aug. 1976 (50D-TM), 1 male; 2 Sept. 1976 (51A-TM), 1 male; 16 Sept. 1976 (50A-TM), 3 males; (50B-TM), 1 male; (50C-TM), 5 males; (51B-TM), 1 male.

Etymology: The name is from the Latin, *arboreus*, referring to the habitat in trees of this species.

Diagnosis: *S. arboreus*, *S. manaus* n.sp., and *S. sp.* (OTU No. 8 of ROWLAND & REDDELL, 1979b, Fig. 61 from Santarém, Taperinha, Brazil) all share two pair of slender elongated spermathecal lobes which have small bulbs followed by terminal constrictions. This morphology is unlike that of all other members of the genus. The three species are difficult to distinguish from each other based on the female genitalia.

Those of *S. arboreus* clearly have the lateral lobes shorter in length than the median lobes; whereas these lobes are subequal in the other two species. The walls of the spermathecae of *S. arboreus* and OTU No. 8 are unlike *S. manaus* in that they are heavily sclerotized and appear slightly wrinkled or wavy (compare Figs. 14-15, 24-25, and ROWLAND & REDDELL, 1979b, Fig. 61).

The male flagellum of *S. arboreus* and *S. manaus* differ from all other known members of the genus by having the two dorsal depressions in a row rather than side by side. The male of OTU No. 8 is unknown. Males of the two new species also differ from congeners by the presence of a pair of elongated pores followed by a pair of crossed setae dorsally on the base of the flagellum. The series of micropores on the distal ends of the lateral extensions of the flagellum also appear to be unique. These two species are most easily distinguished by differences in the postabdominal process (long and rugose in *S. manaus*, shorter and smooth in *S. arboreus*), brush of five setae (modification of d13 seta) on the distal ends of the male flagellum (absent in *S. manaus*); and armament of pedipalpal trochanter and femur [femur with (without in *S. manaus*) large tubercle; trochanter with (without in *S. arboreus*) large tubercle].

Description: Holotype male 3.42 long; orangish-brown.

Cephalothorax: Propeltidium 1.08 long, 0.60 wide, with row of two setae on anterior process and three pairs of dorsal setae. Eyespots distinct, elongate oval, near distal margin of propeltidium. Metapeltidium divided by faint white line.

Abdomen: Tergites I-VII with one pair large dorsal setae each; tergite VIII with one pair strong dorsal setae and one pair small lateral setae; tergite IX with one pair large dorsolateral and one pair small lateral setae. Segments X-XI telescoped, narrow, with one pair dorsolateral setae each; segment XII heavily sclerotized; with one pair very strong, curved dorsal setae; with distinct elongate smooth posterodorsal process. Flagellum with short stalk; two slightly elongated pores dorsally at base; with two deep depressions bordered by raised, heavily sclerotized ridges posteriorly and laterally; posterolateral corners of flagellum each with brush of 5 long setae (Fig. 11 s) in place of d13 seta; minute pores (Fig. 11 mp) surrounding and in second depression on dorsal surface and bases of setae brushes.

Chelicerae: Fixed digit with 5 smaller denticles on and between the two primary teeth. Movable digit: serrula with 18 teeth; guard tooth present; without accessory teeth. Setae: 1 = 3, 2 = 5, 3 = 4, 4 = 6 long dorsally, 3 short ventrally, 5 = 7, 6 = 1.

Pedipalps (Fig. 10): Trochanter produced distally to long, rounded point bearing strong seta and with mesal spur; femur with distinct ventromesal spur; patella curved with rounded ventral knob bearing strong seta.

Legs: Leg I, including coxa, 4.82 long; tarsal segment proportions: 17:3:3:3:4:8. Anterior dorsal margin of femur IV produced at about 90° angle; about 2.1 times as long as deep.

Measurements: Pedipalp: trochanter, 0.16; femur, 0.58; patella, 0.50; tibia, 0.40; tarsus, 0.24; total, 1.88. Leg I: trochanter, 0.24, femur, 1.08, patella, 1.18, tibia, 0.90, tarsus, 0.86. Leg II: trochanter, 0.16; femur, 0.72; patella, 0.40; tibia, 0.42; basitarsus, 0.42; telotarsus, 0.34; total, 2.48. Leg III: trochanter, 0.18; femur, 0.62; patella, 0.26; tibia, 0.34; basitarsus, 0.40; telotarsus, 0.36; total, 2.42. Leg IV: trochanter, 0.24; femur, 0.98; patella, 0.46; tibia, 0.68; basitarsus, 0.60; telotarsus, 0.40; total, 3.36.

Female allotype: As in male except as follows: Propeltidium 0.98 long; body length about 2.8 (abdomen detached). Pedipalp trochanter produced to triangular point with strong seta on point and two strong setae on ventrolateral margin; other segments unmodified. Leg I, including coxa, 4.04; tarsal proportions: 11:2:3:3:3:7. Leg IV femur about 2.2 times as long as deep.

Chelicerae: Setae: 3 = 3.

Flagellum: 3 segmented.

Spermathecae (Figs. 14-15): Two pairs of subequal lobes with slender stalks, usually narrowing near end. Gonopod absent.

Measurements: Pedipalp: trochanter, 0.24; femur, 0.42; patella, 0.38; tibia, 0.34; tarsus, 0.20; total, 1.58. Leg I: trochanter, 0.24; femur, 0.96; patella, 1.00; tibia, 0.74; tarsus, 0.68; total, 3.62. Leg II: trochanter, 0.16; femur, 0.66; patella, 0.34; tibia, 0.36; basitarsus, 0.38; telotarsus, 0.34; total, 2.24. Leg III: trochanter, 0.14; femur, 0.60; patella, 0.26; tibia, 0.32; basitarsus, 0.36; telotarsus, 0.32; total, 2.00. Leg IV: trochanter, 0.24; femur, 0.92; patella, 0.48; tibia, 0.64; basitarsus, 0.56; telotarsus, 0.44; total, 3.28.

Variation: Male total body length varies from 2.80 to 3.54. In some specimens the pedipalp femur has a squared ventral knob bearing two strong setae with the ventromesal spur being less well-developed. The length of the trochanteral spur varies as well. The small lateral setae are sometimes missing from tergite VIII and there is an extra minute pair of dorsolateral setae on tergite IX.

The single female from Lago Januari (propeltidium 1.43) was larger than the allotype (propeltidium 0.98), but otherwise matched closely. There were no detectable differences in the genitalia.

Comments: *S. arboreus* and *S. manaus*, as noted in the diagnosis, differ from other members of the genus in several unique features of the spermathecae and the male flagellum. It is possible that these two species along with *S. sp.*(OTU No. 8) from Santarém represent a separate genus. For the moment, we prefer to retain these in *Surazomus* as a species group. Although these species are identified with *Surazomus* by the groups of characters listed by REDDELL & COKENDOLPHER (1995), no single autapomorphy is known for the genus as currently defined. As further *Surazomus* are described (and redescribed) from South America new characters will be found. Only in recent years have differences in spermathecae and flagellar setae placement been used for taxonomy and all but the most recently described species need to be restudied.

The additional males from Rio Tarumã Mirim listed under "other records" were fragmented and therefore not designated as paratypes. This species has only been found in blackwater and mixedwater seasonal inundation forests on trees. It is the only species of schizomid known by adults from flooded forest, avoiding drowning by ascending into the trees. *Surazomus arboreus* was found in a region at Rio Tarumã Mirim adjacent to a non-flooded upland forest where *S. rodriguesi* n.sp. and *S. mirim* n.sp. were collected, but the latter two were never found in the trees. Likewise, *S. arboreus* was obtained in the seasonal mixedwater inundation forest on trees at Lago Januari. *Surazomus manaus* was collected nearby in the soil of a secondary upland forest at Lago Januari. The collection localities at Lago Januari and Rio Tarumã Mirim are only about 20 km apart.

Surazomus sp. cf. arboreus

Uropygi: ADIS 1981: 107, 109, 114, 154-156 [part].

Records: BRAZIL: Edo. Amazônia: Rio Tarumã Mirim, blackwater inundation forest (Igapó) (J. ADIS), 6 Jan. 1976, 1 specimen; 12 Jan. 1976, 5 specimens; 19 Jan. 1976, 4 specimens; 26 Jan. 1976, 2 specimens; 2 Feb. 1976, 1 specimen; 17 Feb. 1976, 2 specimens; 23 Feb. 1976, 2 specimens; 8 March 1976, 3 specimens; 31 March 1976, 29 specimens; 31 June 1976, 1 specimen; 21 July 1976, 1 specimen; 27 July 1976, 3 specimens; 4 Aug. 1976, 4 specimens; 16 Aug. 1976, 9 specimens; 2 Sept. 1976, 22 specimens; 16 Sept. 1976, 192 specimens; 30 Sept. 1976, 39 specimens; 13 Oct. 1976, 6 specimens; 19 Jan. 1977, 1 specimen; 2 Feb. 1977, 3 specimens; 9 Feb. 1977, 5 specimens; 16 Feb. 1977, 7 specimens; 23 Feb. 1977, 3 specimens; 2 March 1977, 4 specimens; 10 March 1977, 4 specimens; 16 March 1977, 3 specimens; 24 March 1977, 2 specimens; 30 March 1977, 2 specimens; 6 April 1977, 4 specimens; 13 April 1977, 3 specimens; 20 April 1977, 4 specimens; 27 April 1977, 5 specimens; 14 Feb. 1983, 8 specimens; 14 March 1983, 11 specimens; 29 March 1983, 6 specimens; 13 April 1983, 5 specimens; 29 April 1983, 4 specimens; 13 May 1983, 71 specimens; 31 May 1983, 24 specimens; 28 Dec. 1983, 1 specimen; 28 Feb. 1984, 4 specimens; 8 March 1984, 1 specimen; 30 March 1984, 12 specimens; 30 April 1984, 3 specimens; 31 May 1984, 1 specimen.

Lago Januari, mixedwater inundation forest (J. ADIS et al.), Oct. 1987-May 1988, 24 immatures; Dec. 1987-July 1988, 15 immatures; 7 March 1998, 3 immatures.

Comments: The only species identified from these studies of arboreal schizomids was *S. arboreus*, therefore it is likely that all of this material belongs to that species. The material listed here includes immature and subadult males and immature and undissected presumably adult females.

***Surazomus boliviensis* n.sp. (Fig. 16)**

Schizomus sp., OTU No. 11 [*brasiliensis* group]: ROWLAND 1975: 128, 130-132, 142, 144, 146, 158-160, 162, 361-364, map 7, figs. 148, 291; ROWLAND & REDDELL 1979b: 89, 103, 105-106, 112-113, 115-116, figs. 34, 64.

Surazomus sp. No. 1: REDDELL & COKENDOLPHER 1995: 19, 117.

Type-data: BOLIVIA: Beni Province: Chacobo Indian Village, Río Benicito, 66 W, 12.20 S (4 Aug. 1960, B. MALKIN), under bark of log, female holotype (AMNH).

Etymology: The species is named for Bolivia, the country of its origin.

Diagnosis: This species is most similar in genital morphology to two cave inhabiting species from Ecuador (*Surazomus* sp. from Cueva de los Tayos in REDDELL & COKENDOLPHER, 1984: Fig. 15 and OTU No. 10 in ROWLAND & REDDELL, 1979b, Fig. 63 from Dolline de la grotte de Baños, Baños) and *Surazomus cumbalensis* (KRAUS) from the surface in Colombia. The terminal bulbs in the Colombian and Ecuadorian species are somewhat rounded, whereas they are not developed in *S. boliviensis*. The median lobes are somewhat shorter than the lateral lobes in *S. boliviensis* but are subequal in length in the other species. The surface of the spermathecae are covered with microtubules/pores in *S. boliviensis*. They are apparently missing in the species from Cueva de los Tayos, but this will have to be determined by a reexamination of the specimens illustrated by ROWLAND and REDDELL (1979b) because no pores were illustrated for any species in that publication (including what is described here as *S. boliviensis*).

Description: Holotype female about 3.26 long (abdomen separated from cephalothorax); brownish-green.

Cephalothorax: Propeltidium 1.02 long, 0.48 wide; with a row of two setae on anterior process and three pairs of dorsal setae; eyespots distinct, irregular. Metapeltidium divided.

Abdomen: Tergites I-VII with one pair dorsal setae each; tergite VIII-IX with one pair dorsolateral and one pair lateral setae each. Flagellum with three segments.

Spermathecae (Fig. 16): With two pairs of lobes with slender stalks, gradually enlarging distally to rounded end; medians slightly shorter than laterals. Gonopod not visible and probably absent.

Chelicerae: Fixed digit with 5 smaller denticles on and between the two primary teeth. Movable digit: serrula with 20 teeth; guard tooth present. Setae: 1 = 3, 2 = 4, 3 = 4, 4 = 5 long dorsally, 4 short ventrally, 5 = 7, 6 = 1.

Pedipalps: Trochanter slightly produced ventrodistally; other segments without modifications.

Legs: Leg I, including coxa, 4.04 long; tarsal segment proportions: 12:2:4:3:3:8. Anterodorsal margin of femur IV produced at about 90° angle; about 2.4 times as long as deep.

Measurements: Pedipalp: trochanter, 0.14; femur, 0.46; patella, 0.44; tibia, 0.34; tarsus, 0.24; total, 1.62. Leg I: trochanter, 0.20; femur, 0.92; patella, 1.02; tibia, 0.76; tarsus, 0.68; total, 3.58. Leg II: trochanter, 0.18; femur, 0.76; patella, 0.40; tibia, 0.40; basitarsus, 0.40; telotarsus, 0.36; total, 2.50. Leg III: trochanter, 0.18; femur, 0.56; patella, 0.32; tibia, 0.32; basitarsus, 0.42; telotarsus, 0.36; total, 2.16. Leg IV: trochanter, 0.24; femur, 0.96; patella, 0.42; tibia, 0.64; basitarsus, 0.60; telotarsus, 0.42; total, 3.28.

***Surazomus brasiliensis* (KRAUS, in KRAUS & BECK) (Figs. 17-18)**

Trithyreus brasiliensis KRAUS, in KRAUS & BECK 1967: 401-405, figs. 1-6.

Schizomus brasiliensis: ROWLAND 1975: 33, 128, 130-132, 138, 140-141, 152-155, 160-162, 361-364, map 7, figs. 123, 129, 291; ROWLAND & REDDELL 1979b: 89, 103, 105-111, figs. 34, 39, 45.

Surazomus brasiliensis: REDDELL & COKENDOLPHER 1995: 118; ADIS et al., 1999: 205-210, figs. 1-4.

New records: BRAZIL: Edo. Amazônia: Biological Reserve INPA/SUFRAMA, km 45 on the Manaus-Boa Vista highway (BR-174), primary whitesand forest (Campinarana), Kempson soil extraction (J. ADIS et al.), 17 August 1988 (K12-CPA), 1 male (TMMC); (K16-CPA), 1 female; (K20-CPA), 1 female; 29

March 1988 (K18-CPA), 2 females; Reserva Florestal A. Ducke, 26 km N of Manaus (J.W. DE MORAIS, J. ADIS), primary (non-flooded) upland forest, 10 Nov. 1982 (K18-RD3), 1 male (TMMC); (K20-RD3), 1 male; 8 Dec. 1982 (K22-RD4), 1 male; 12 Feb. 1983 (K12-RD6), 1 male; 13 March 1983 (K16-RD7), 1 male; 12 April 1983 (K30-RD8), 1 male; 9 August 1983 (K17-RD12), 1 female; (K19-RD12), 1 male; 16 April 1983 (K20-RD8), 1 female (TMMC); 10 May 1983 (K16-RD9), 1 male; (K22-RD9), 1 female (TMMC); 9 August 1983 (K22-RD12), 1 female; 12 February 1983 (K28-RD6), 1 female; Reserva Florestal A. Ducke, terra firme (J. ADIS et al.), 27 October 1982 (E10-BIRD), 1 female.

Diagnosis: This species can be distinguished from all congeners by the presence of two pair of relatively short spermathecal lobes which terminate in greatly enlarged rounded bulbs; the lateral lobes shorter and smaller than the median pair (Figs. 17-18). *Surazomus sturmi* (KRAUS) also has two pair of greatly enlarged rounded lobes, but the lobes are about the same size with the lateral lobes being subequal to longer than the median pair (ROWLAND & REDDELL, 1979b: Fig. 68). *Surazomus sturmi* is known only from the vicinity of Bogotá, Colombia. Males of *S. brasiliensis* are recognized by the presence of a large ventral tubercle on the pedipalpal femur and a trilobate flagellum with a pair of central depressions flanked by a pair of lateral swellings and a small median ridge. The male lacks a well defined posteriodorsal process on the abdomen (KRAUS & BECK, 1967: figs. 2-5). See also diagnosis of *S. mirim* n.sp.

Redescription: Male (K12-CPA) from Biological Reserve INPA/SUFRAMA, 2.74 long; orangish-brown, partially cleared by preservative.

Cephalothorax: Propeltidium 0.83 long, 0.52 wide, partially crushed, with row of two setae on anterior process and three pairs of dorsal setae. Eyespots distinct, elongate oval. Metapeltidium divided by faint white line.

Abdomen: Tergites I-VII with one pair large dorsal setae each; tergite VIII with one pair large dorsal and one pair small lateral setae; tergite IX with one pair large dorsolateral and one pair small lateral setae. Segments X-XI short, not telescoped, XI with one pair dorsolateral setae; XII with distinct rounded posterodorsal process and two strong dorsal setae. Flagellum roughly triangular with rounded lateral lobes; with prominent dorsal depression widening posteriorly, partially divided near end.

Chelicerae: Fixed digit with 5 smaller denticles on and between the two primary teeth. Movable digit: serrula with 14 teeth; guard tooth present. Setae: 1 = 3, 2 = 5, 3 = 4, 4 = 5 long dorsally, 3 short ventrally, 5 = 6, 6 = 1.

Pedipalps: Trochanter produced ventrodorsally to sharp point bearing strong setae; femur with strong sharp ventral spur; trochanter curved.

Legs: Leg I, including coxa, 3.94 long, tarsal segment proportions: 11:3:3:3:4:8. Anterodorsal margin of femur IV produced at about 90° angle; about 2.0 times as long as deep.

Measurements: Pedipalp: trochanter, 0.14; femur 0.50; patella, 0.40; tibia, 0.30; tarsus, 0.18; total, 1.52. Leg I: trochanter, 0.16; femur, 0.92; patella, 1.04; tibia, 0.76; tarsus, 0.68; total, 3.56. Leg II: trochanter, 0.12; femur, 0.58; patella, 0.30; tibia 0.36; basitarsus, 0.32; telotarsus, 0.28; total, 1.96. Leg III: trochanter, 0.14; femur, 0.54; patella, 0.18; tibia 0.26; basitarsus, 0.30; telotarsus, 0.34; total, 1.76. Leg IV: trochanter 0.14; femur 0.80; patella, 0.38; tibia, 0.58; basitarsus, 0.48; telotarsus, 0.34; total, 2.72.

Female (K20-CPA) from Biological Reserve INPA/SUFRAMA: As in male except as follows: Flagellum with three segments. Pedipalps: trochanter produced ventrodorsally to slight round knob; other segments without other modifications. Leg I, including coxa, 4.08 long; tarsal segment proportions: 11:3:3:3:4:7. Femur IV about 2.1 times as long as deep.

Chelicerae: Serrula with 15 teeth. Setae: 2 = 4, 3 = 3, 4 = 6 long dorsally, 4 short ventrally, 5 = 7.

Spermathecae (Figs. 17-18) with two pairs of lobes; stalks slender enlarging abruptly to ovate bulbs; lateral lobes slightly shorter than median lobes.

Measurements: Pedipalp: trochanter, 0.22; femur, 0.42; patella, 0.40; tibia, 0.34; tarsus, 0.22; total, 1.60. Leg I: trochanter, 0.24; femur, 0.88; patella, 1.10; tibia, 0.74; tarsus, 0.66; total, 3.62. Leg II: trochanter, 0.14; femur, 0.62; patella, 0.34; tibia, 0.34; basitarsus, 0.38; telotarsus, 0.28; total, 2.10. Leg III: trochanter, 0.12; femur, 0.54; patella, 0.28; tibia, 0.32; basitarsus, 0.36; telotarsus, 0.34; total, 1.96. Leg IV: trochanter, 0.30; femur, 0.88; patella, 0.40; tibia, 0.60; basitarsus, 0.52; telotarsus, 0.36; total, 3.06.

***Surazomus manaus* n.sp. (Figs. 19-25)**

Uropygi: ADIS et al., 1987a:193, Fig. 3 [part]; ADIS et al., 1987b:178, Fig. 3 [part].

Type-data: BRAZIL: Edo. Amazõnas: INPA campus, Manaus, 24 April 1986 (J. ADIS et al.) (K19-INPA), male holotype; (K18-INPA), female paratype; (K27-INPA), female paratype (TMMC); 25 September 1985 (J. ADIS et al.) (K30-C.I.), female allotype.

Other record: BRAZIL: Edo. Amazõnas: Lago Janauari, secondary upland forest, 7 March 1996 (J. ADIS et al.) (K10-LJ-cap), 1 female.

Etymology: The name is a noun in apposition referring to the type-locality.

Diagnosis: See diagnosis for *S. arboreus* n.sp.

Description: Holotype male, 3.32 long; pale orangish-brown, partially cleared by preservative.

Cephalothorax: Propeltidium 1.04 long, 0.56 wide, with row of two setae on anterior process and three pair dorsal setae. Eyespots distinct, elongate oval. Metapeltidium entire, with faint light line extending from anterior margin to near midpoint.

Abdomen: Tergites I-VIII with one pair large dorsal setae each, tergite IX very short, with one pair large dorsolateral and one pair small lateral setae. Segments X-XI very short, not telescoped; XII with sharp pointed posterodorsal process flanked by pair of strong setae; process rugose. Flagellum (Figs. 20-23) with pair of elongated pores (Fig. 21 p) at base dorsally; pentagonal with row of two prominent depressions; posterior edges of depressions slightly upraised posteriorly and heavily sclerotized; two rounded knobs extending from posterolateral margins with terminal regions covered with minute pores (Fig. 20 mp), lacking dl3 and brush of setae.

Chelicerae: Fixed digit with 6 smaller denticles on and between the two primary teeth. Movable digit: serrula with 16 teeth; guard tooth present. Setae: 1 = 3, 2 = 5, 3 = 4, 4 = 6 long dorsally, 3 short ventrally, 5 = 7, 6 = 1.

Pedipalps (Fig. 19): Trochanter produced to long sharp point, with another distinctly produced tubercle on posteromesal margin; trochanter mesal spur on posteromesal tubercle; femur with rounded knob on ventral margin; patella with small ventral knob about 1/3 from posterior margin.

Legs: Leg I, including coxa, 5.24 long, tarsal segment proportions: 17:3:4:3:3:4:8. Anterodorsal margin of femur IV produced at about 90° angle; about 2.2 times as long as deep.

Measurements: Pedipalp: trochanter, 0.2; femur, 0.66; patella, 0.66, tibia, 0.48; tarsus, 0.24; total, 2.24. Leg I: trochanter, 0.26; femur, 1.16; patella, 1.46; tibia, 0.96; tarsus, 0.86; total, 4.7. Leg II: trochanter, 0.16; femur, 0.76; patella, 0.38; tibia, 0.46; basitarsus, 0.44; telotarsus, 0.36; total, 2.56. Leg III: trochanter, 0.20; femur, 0.64; patella, 0.28; tibia, 0.34; basitarsus, 0.44; telotarsus, 0.36; total, 2.26. Leg IV: trochanter, 0.28; femur, 1.08; patella, 0.46; tibia, 0.70; basitarsus, 0.60; telotarsus, 0.42; total, 3.54.

Female paratype (K27-INPA): As in male except as follows: metapeltidium without obvious faint line; tergite IX longer; flagellum with three segments; serrula of chelicerae with 13 teeth; pedipalps produced to triangular point; without other modifications; leg I, including coxa, 4.6 long; tarsal segment proportions: 14:3:3:3:4:4:7. Spermathecae (Figs. 24-25) with two pairs of long slender lobes, enlarging slightly before end, then terminating in narrow rounded point; median lobes subequal to or slightly longer than lateral lobes. Gonopod not visible and probably absent.

Measurements: Pedipalp: trochanter, 0.16; femur, 0.48; patella, 0.44; tibia 0.38; tarsus, 0.22; total, 1.68. Leg I: trochanter, 0.24; femur, 1.10; patella, 1.22; tibia 0.88; tarsus, 0.70; total, 4.14. Leg II: trochanter, 0.22; femur, 0.70; patella, 0.42; tibia, 0.40; basitarsus, 0.38; telotarsus, 0.32; total, 2.44. Leg III: trochanter, 0.20; femur, 0.64; patella, 0.28; tibia, 0.30; basitarsus, 0.40; telotarsus, 0.36; total, 2.18. Leg IV: trochanter, 0.36; femur, 0.96; patella, 0.46; tibia, 0.66; basitarsus, 0.60; telotarsus, 0.42; total, 3.46.

Variation: The terminal ends of the spermathecae are somewhat atypical on the median pair of the allotype (Fig. 25). The ends on all the other specimens examined are more like those of the paratype illustrated in Fig. 24; with a distinct elongated constriction.

Comment: See comments for *S. arboreus* n.sp.

Surazomus sp. cf. *manaus*

Uropygi: ADIS et al., 1987a:193, Fig. 3 [part]; ADIS et al., 1987b:178, Fig. 3 [part].

Records: BRAZIL: Edo. Amazônia: secondary upland forest (capoeirã), INPA campus, Manaus (J. ADIS et al.), 25 Sept. 1985 (K14-C.I.), 1 immature; (K19-C.I.), 1 immature; (K23-C.I.), one penultimate male; (K30-C.I.), 4 immature; 24 April 1986 (K10-INPA), 1 immature; (K15-INPA), one penultimate male; (K19-INPA), 2 immatures; (K27-INPA), 3 immatures; (K30-INPA), 1 immature.

Comments.: These immature specimens are only tentatively assigned to this species. This is the only species found in the secondary upland forest at the INPA Campus at Manaus.

Surazomus mirim n.sp. (Figs. 26-30)

Type-data: BRAZIL: Edo. Amazônia: Rio Tarumã Mirim, 20 km upstream of Manaus, secondary (non-flooded) upland forest (capoeirã), 26 July 1983 (J.M.G. RODRIGUES, J. ADIS) (K11-TM), male holotype; (K12-TM), female allotype; 25 Aug. 1982 (K10-TM), male paratype; 25 Aug. 1982 (K12-TM), female paratype (TMMC); 25 Aug. 1982 (K13-TM), female paratype (TMMC); 25 Aug. 1982 (K20-TM), male paratype (TMMC); 25 Aug. 1982 (K28-TM), male paratype (TMMC); 19 Sept. 1982 (K31-TM), female paratype; 29 Sept. 1982 (K16-TM), male paratype; 29 Sept. 1982 (K22-TM), male paratype; 29 Sept. 1982 (K28-TM), male paratype; 26 Oct. 1982 (K13-TM), male paratype; 26 Oct. 1982 (K17-TM), male paratype; 23 Nov. 1982 (K14-TM), female paratype; 23 Nov. 1982 (K27-TM), male paratype; 23 Nov. 1982 (K33-TM), male paratype; 29 Dec. 1982 (K12-TM), female paratype; 29 Dec. 1982 (K16-TM), male paratype; 29 Dec. 1982 (K30-TM), female paratype; 30 Jan. 1983 (K12-TM), male paratype, female paratype; 30 Jan. 1983 (K20-TM), female paratype; 30 Jan. 1983 (K30-TM), male paratype; 28 Feb. 1983 (K11-TM), male paratype; 28 March 1983 (K12-TM), male paratype; 25 April 1983 (K24-TM), female paratype; 25 April 1983 (K25-TM), 2 male paratypes (TMMC); 26 July 1983 (K12-TM), male paratype; 26 July 1983 (K33-TM), male paratype; 24 Aug. 1983 (K16-TM), male paratype; 24 Aug. 1983 (K18-TM), male paratype; 24 Aug. 1983 (K28-TM), female paratype; 24 Aug. 1983 (K30-TM), male paratype; 24 Aug. 1983 (K32-TM), male paratype; 16 March 1990 (K23 TM-capoeirã), male paratype.

Etymology: The name is a noun in apposition taken from the type-locality Rio Tarumã Mirim. Mirim is from the Tupm Indian language and means little whereas Taruma means tree species of the genus *Vitex* [tarum mirim = *Vitex sellowiana* (Verbenaceae)].

Diagnosis: This species is most closely related to *S. brasiliensis* (see also diagnosis of that species). The male flagellum of *S. mirim* differs from that of *S. brasiliensis* in having less distinctly produced lateral lobes and shorter median swellings. The pedipalpal femur of the new species is unlike that of *S. brasiliensis* in that it has no tubercle. The spermathecal lobes terminate in much larger, more rounded bulbs in *S. brasiliensis* than in *S. mirim*.

Description: Holotype male 2.90 long. Light orangish-brown, but faded in preservative.

Cephalothorax: Propeltidium 0.84 long, 0.42 wide; with row of two, slightly offset setae on anterior process and three pairs of dorsal setae. Eyespots absent. Metapeltidium entire.

Abdomen: Tergites I-VIII with one pair large dorsal setae each; tergite IX with one pair large dorsolateral and one pair small lateral setae. Segments X-XI telescoped. Segment XII with one pair strong dorsal, lateral, and ventral setae; with small truncate posterodorsal swelling. Flagellum (Figs. 27-29) with short stalk; round lateral lobes; median depression flanked by swellings; with minute pores scattered along lateral borders on distal half of flagellum.

Chelicerae: Fixed digit with 6 smaller denticles on and between the two primary teeth. Movable digit: serrula with 15(?) teeth; guard tooth present; with short lamella. Setae: 1 = 3, 2 = 4, 3 = 4, 4 = 5 long dorsally, 3 short ventrally, 5 = 7, 6 = 1.

Pedipalps (Fig. 26): Trochanter produced distally with small knob bearing strong seta; ventral margin of femur produced to triangular point; patella strongly curved ventrally with spur near distal margin.

Legs: Leg I, including coxa, 3.88 long; tarsal segment proportions: 8:3:3:2:4:4:7. Anterodorsal margin of femur IV produced at about 90° angle; about 2.35 times as long as deep.

Measurements: Pedipalp: trochanter, 0.18; femur, 0.38; patella, 0.36; tibia 0.22; tarsus, 0.18; total, 1.32. Leg I: trochanter, 0.16; femur, 0.90; patella, 0.98; tibia 0.68; tarsus, 0.72; total, 3.44. Leg II: trochanter, 0.12; femur, 0.60; patella, 0.26; tibia, 0.40; basitarsus, 0.30; telotarsus, 0.28; total, 1.96. Leg III: trochanter, 0.12; femur, 0.56; patella, 0.24; tibia, 0.26; basitarsus, 0.34; telotarsus, 0.28; total, 1.80. Leg IV: trochanter, 0.22; femur, 0.94; patella, 0.36; tibia, 0.54; basitarsus, 0.48; telotarsus, 0.34; total, 2.88.

Female allotype: As in male except as follows: propeltidium, 0.92 long, 0.50 wide; total length, 3.16. Flagellum with three segments. Pedipalp trochanter produced to rounded knob; femur with small rounded knob on ventral surface near posterior edge. Leg I, including coxa, 3.76 long. Femur IV about 2.0 times as long as deep.

Chelicerae: Fixed digit with 7 smaller denticles on and between the two primary teeth. Movable digit: serrula with 18 teeth; guard tooth present; with short (about 1/2 the size of that on the male) lamella slightly basal to position of guard tooth. Setae: 4 = 6 long dorsally, 3 short ventrally.

Spermathecae (Fig. 30): With two pairs of lobes; stalk slender with rounded terminal bulbs. Gonopod absent.

Measurements: Pedipalp: trochanter, 0.10; femur, 0.38; patella, 0.36; tibia, 0.30; tarsus, 0.18; total, 1.32. Leg I: trochanter, 0.20; femur, 0.82; patella, 0.96; tibia, 0.68; tarsus, 0.66; total, 3.32. Leg II: trochanter, 0.14; femur, 0.56; patella, 0.32; tibia, 0.36; basitarsus, 0.30; telotarsus, 0.28; total, 1.96. Leg III: trochanter, 0.10; femur, 0.48; patella, 0.26; tibia, 0.26; basitarsus, 0.30; telotarsus, 0.32; total, 1.72. Leg IV: trochanter, 0.30; femur, 0.80; patella, 0.36; tibia, 0.56; basitarsus, 0.42; telotarsus, 0.32; total, 2.76.

Surazomus rodriguesi n.sp. (Figs. 31-34)

Type-data: BRAZIL: Edo. Amazônia: Rio Tarumã Mirim, 20 km upstream of Manaus, secondary (non-flooded) upland forest (capoeirã), 25 April 1983 (J.M.G. RODRIGUES, J. ADIS) (K26-TM), male holotype.

Etymology: The name is a patronym honoring one of the collectors, J. M. G. Rodrigues of the Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus.

Diagnosis: The relationships of this species are obscure; the shape of the male flagellum readily distinguishes it from all other species assigned to *Surazomus*. The slight development or absence of the posterodorsal process is similar to that in the Brazilian *S. brasiliensis* and *S. mirim* and the Colombian *S. macarensis* (KRAUS) and *S. sturmi*. The male pedipalp, however, is like that of *S. mirim* in that it lacks the armature of the femur that is found in the other species. Besides the different morphology of the flagellum in the new species, the four large spinose-setae (paired v11, v12) on the ventrodorsal margin are finely serrulate. Serrulate setae are not present on these other species.

Description: Holotype male 2.91 long. Pale yellow, faded and partially cleared by preservative.

Cephalothorax: Propeltidium 0.81 long, 0.46 wide, with row of two setae on anterior margin and three pairs of dorsal setae. Eyespots distinct, elongate oval. Metapeltidium divided by distinct white line.

Abdomen: Tergites I-VII with one pair large dorsal setae; VIII with one pair large dorsal, one pair minute lateral setae; IX very narrow, with one pair large dorsolateral, one pair small lateral setae. Segments X-XI telescoped; XI with one pair dorsolateral setae; XII with slight rounded posterodorsal process, with one pair strong dorsal setae. Flagellum (Figs. 32-34) subrectangular dorsally, slightly rounded posteriorly, with rectangular median depression containing distinct median ridge; dorsally projected upward; ventral surface expanded laterally with rounded posterior margins; four large spinose-setae on ventrodorsal margin finely serrulate, other setae smooth. Identities and positions of dorsal setae uncertain, especially dm indicated by two tiny sockets (setae missing) on sides of dorsal projection.

Chelicerae: Fixed digit with 7 smaller denticles on and between the two primary teeth. Movable digit: serrula with 13 teeth; guard tooth present; lacking accessory teeth. Setae: 1 = 3, 2 = 5, 3 = 4, 4 = 5 long dorsally, 2 short ventrally, 5 = 7, 6 = 1.

Pedipalps (Fig. 31): Trochanter with anterior margin squared, with slight anteroventral projection, with small mesal spur; femur with small ventral knob; patella curved.

Legs: Leg I, including coxa, 3.64 long; tarsal segment proportions: 11:3:3:3:3:8. Anterodorsal margin of femur IV produced at about 90° angle; about 2.3 times as long as deep.

Measurements: Pedipalp: trochanter, 0.10; femur, 0.36; patella, 0.32; tibia 0.26; tarsus, 0.16; total, 1.20. Leg I: trochanter, 0.20; femur, 0.74; patella, 0.96; tibia, 0.66; tarsus, 0.70; total, 4.46. Leg II: trochanter, 0.14; femur, 0.56; patella, 0.30; tibia, 0.32; basitarsus, 0.28; telotarsus, 0.30; total, 1.90. Leg III: trochanter, 0.16; femur, 0.50; patella, 0.22; tibia 0.24; basitarsus, 0.28; telotarsus, 0.32; total, 1.72. Leg IV: trochanter, 0.20; femur 0.86; patella, 0.32; tibia, 0.54; basitarsus, 0.44; telotarsus, 0.36; total, 2.72.

Comments: It is possible that this species does not belong in *Surazomus*; the discovery of a female should help to clarify its proper placement.

Hubbardiinae genus and species

New records: BRAZIL: Edo. Amazonas: Reserva Florestal A. Ducke, primary (non-flooded) upland forest (J.W. DE MORAIS and J. ADIS), 6 Sept. 1982, 3 specimens; 8 Sept. 1982, 9 specimens; 13 Oct. 1982, 23 specimens; 10 Nov. 1982, 18 specimens; 8 Dec. 1982, 21 specimens; 12 Jan. 1983, 22 specimens; 12 Feb. 1983, 9 specimens; 13 March 1983, 4 specimens; 12 April 1983, 9 specimens; 10 May 1983, 13 specimens; 9 June 1983, 4 specimens; 11 July 1983, 11 specimens; 5 Aug. 1983, 1 specimen; 9 Aug. 1983, 16 specimens; 6 Sept. 1983, 13 specimens; 10 Nov. 1983, 3 specimens; 8 Dec. 1984, 1 specimen; terra firme (S. GOLOVATCH), 1 immature; 27 Oct. 1987 (J. ADIS et al.), 3 immatures.

Biological Reserve INPA/SUFAMA, at km 45 on the Manaus-Boa Vista highway, primary whitesand forest (Campinarana) (J. ADIS et al.), 29 March 1988, 3 immatures; 17 Aug. 1988, 3 immatures.

Praia Grande (Rio Negro), blackwater inundation forest (Igapó) (J. ADIS et al.), 23 April 1981, 25 immatures; (J. ADIS et al.), 2 Sept. 1991, 3 immatures; terre firme, (S. GOLOVATCH), 13 March 1998, 1 immature.

Rio Taramã Mirim, 20 km upstream of Manaus, secondary (non-flooded) upland forest (capoeirã) (J.M.G. RODRIGUES, J. ADIS), 25 Aug. 1982, 45 specimens; 29 Sept. 1982, 28 specimens; 26 Oct. 1982, 18 specimens; 23 Nov. 1982, 10 specimens; 28 Dec. 1982, 4 specimens; 29 Dec. 1982, 5 specimens; 30 Jan. 1983, 27 specimens; 28 Feb. 1983, 13 specimens; 28 March 1983, 26 specimens; 25 April 1983, 17 specimens; 26 May 1983, 11 specimens; 27 June 1983, 17 specimens; 26 July 1983, 41 specimens; 24 Aug. 1983, 43 specimens; 25 Aug. 1983, 10 specimens; 24 Aug. 1984, 2 specimens; 26 July 1987, 1 specimen.

Comments.- Material designated as "specimens" includes immatures, subadult males and undissected adult females. Most of the specimens from the secondary upland forest at Rio Taramã Mirim are probably applicable to *S. mirim*; however, since *S. rodriguesi* also occurs in the same area some of the material may also apply to that species. Most of the material from the Reserva Florestal A. Ducke probably belongs to *S. brasiliensis*; however, since *A. duckei* also occurs at this locality some of the material may actually apply to that species.

Acknowledgments

We are greatly obliged to PD Dr. W.J. Junk, Head of the Tropical Ecology Working Group at the Max-Planck-Institute for Limnology in Plön, Germany, who helped to obtain a grant (for JCC) from the Max-Planck-Society. PD Dr. Joachim Adis provided us with the many collections of Amazonian schizomids as well as information about their collection. We are grateful to Dr. Adis for all of his assistance and cooperation. Dr. Adriano Kury is thanked for allowing us to review his manuscript on the first schizomids from Rio de Janeiro before it was published.

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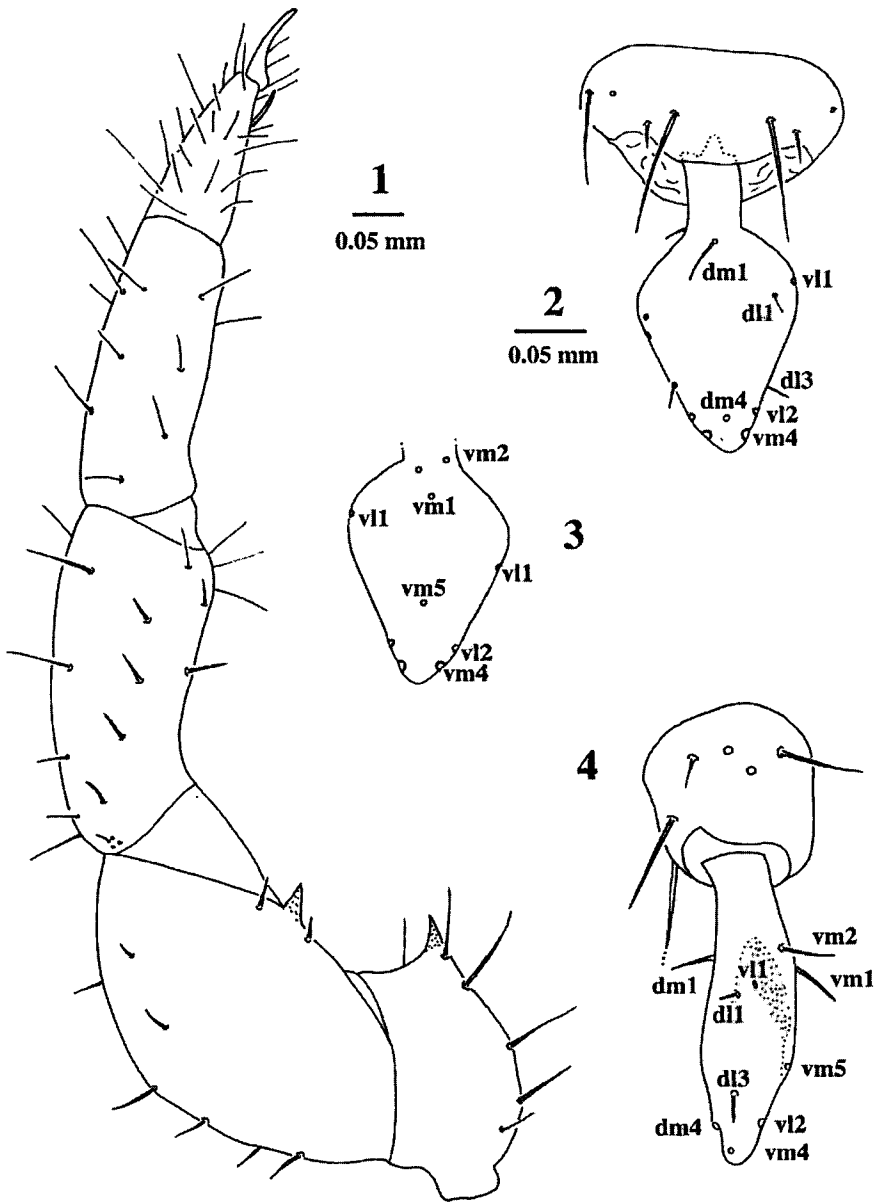
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Note added in proofs

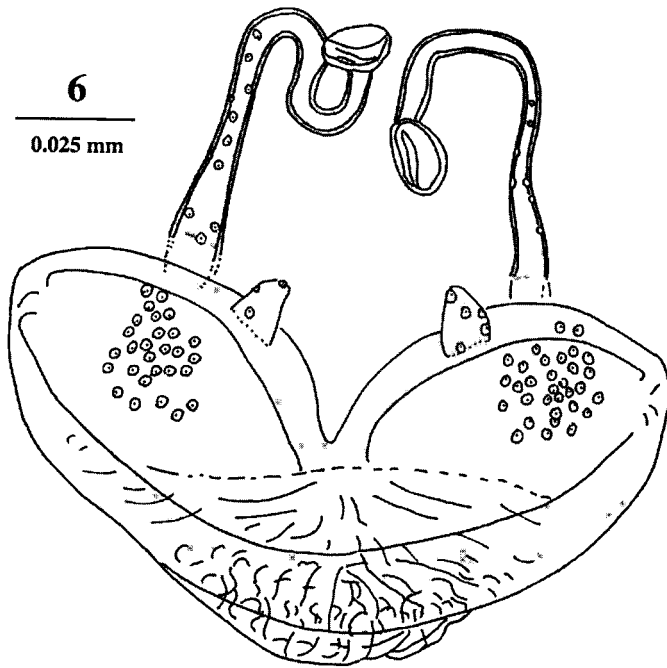
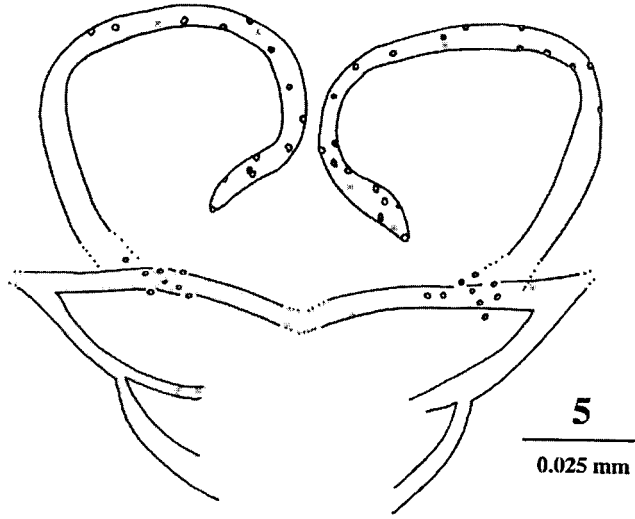
Dr. M.S. HARVEY alerted us to and Dr. N.I. PLATNICK provided us a copy of a publication that we had missed: GONZÁLEZ-SPONGA, M. A., 1997. Arácnidos de Venezuela. Un nuevo género y dos nuevas especies de Schizomidae y redescipción de *Schizomus simoni* Hansen y Sørensen, 1905 del sistema montañoso de la costa (Schizomida). *Acta Biológica Venezolana*, 17(2): 1-10.

In this publication, a new genus and species are described, an additional new species is named in an existing genus and a previously described species is redescribed. Apparently, this author was unaware of several of our more recent publications (including REDDELL & COKENDOLPHER, 1995) because his taxa were incorrectly placed in the Schizomidae (correctly should be Hubbardiidae); the Old World genus *Schizomus* was used for two of the species [correctly should be *Hansenochrus yolandae* (GONZÁLEZ-SPONGA), new combination, and *Hansenochrus simonis* (HANSEN, in HANSEN & SÖRENSEN)], and the new genus was not compared to the numerous new genera we described in 1995. Unfortunately, GONZÁLEZ-SPONGA also did not mention some of the characters we listed in our generic revision, especially the morphology of the spermathecae. None-the-less, *Stenoschizomus* GONZÁLEZ-SPONGA

does appear to be valid. The unsplit metapeltidium, dimorphic male and female palps, and the morphology of the male palp and flagellum will separate this genus from all but *Mayazomus* REDDELL & COKEN-DOLPHER. *Stenoschizomus* differs from *Mayazomus* in the form of the palpal patella (long and strongly curved in *Mayazomus*, short and slightly curved in *Stenoschizomus*), anterior edge of the palpal femur (extended in *Mayazomus*, rounded in *Stenoschizomus*), the number of setae on the second abdominal tergite (four or more on *Mayazomus*, two on *Stenoschizomus*), and the number of dorsal setae on the propeltidium (two pairs on *Mayazomus*, four pairs on *Stenoschizomus*).



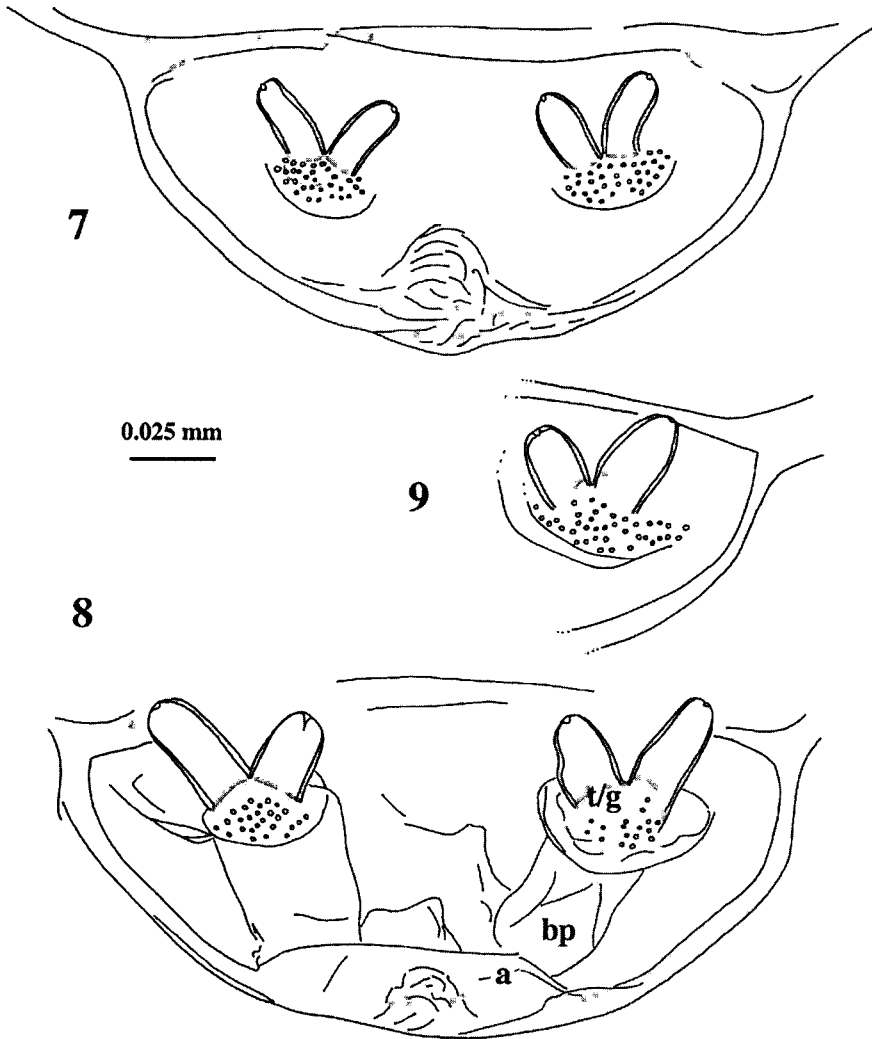
Figs. 1-4:
Adisomus duckei n.sp. male holotype.
 1: lateral view of right pedipalp; 2: dorsal view of flagellum; 3: ventral view of flagellum; 4: right lateral view of flagellum.



Figs. 5-6:

Ventral views of female spermathecae.

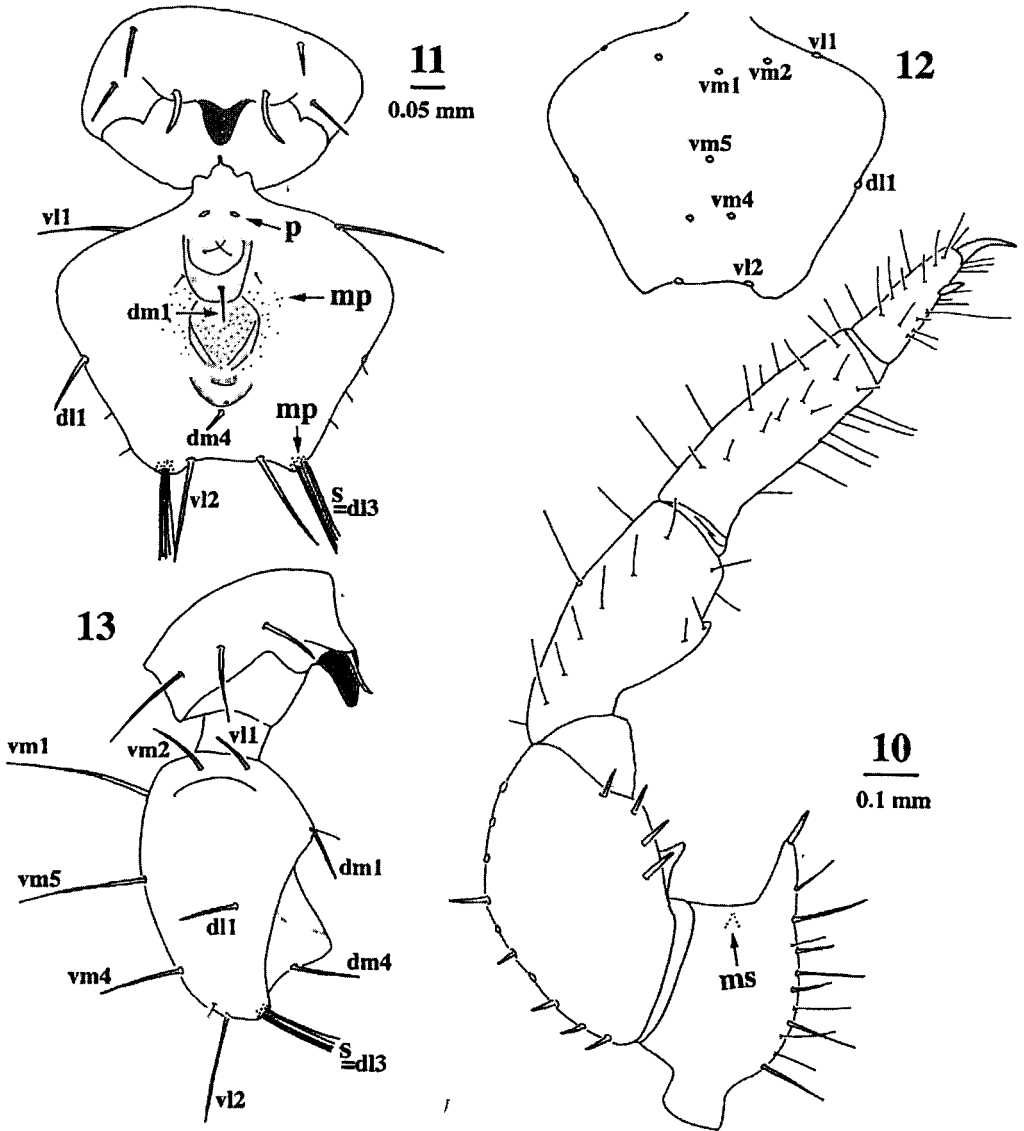
5: *Adisomus duckei* n.sp (K13-RD 1.4.87). 6: *Rowlandius sul*, holotype.



Figs. 7-9:

Hansenochrus guyanensis n.sp. ventral views of female spermathecae.

7: from Atkinson Field; 8: from Kartabo 1924; 9: left spermathecum of holotype from Kartabo 1919 (a = atrium; bp = basal piece of ROWLAND, 1975; t/g = truncus/secretory gland junction).



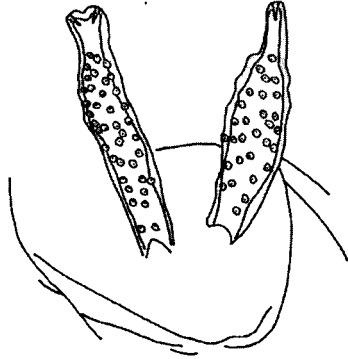
Figs. 10-13:

Surazomus arboreus n.sp. male holotype.

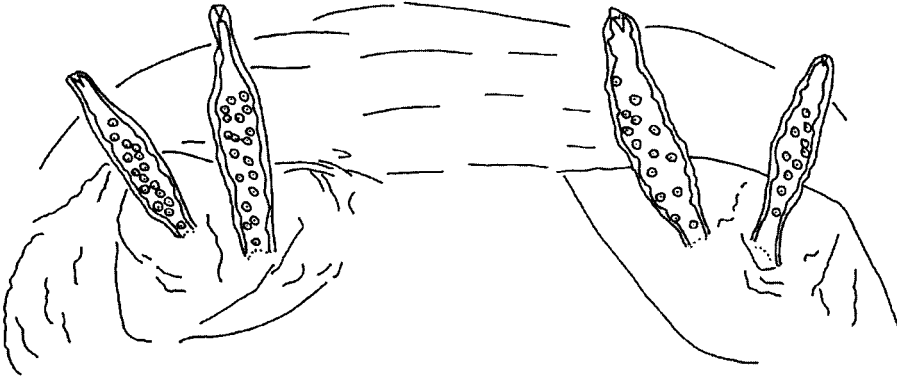
10: lateral view of right pedipalp; 11: dorsal view of flagellum; 12: ventral view of flagellum; 13: left lateral view of flagellum (p = pore, mp = micropore, s = setal brush, ms = indication of placement of spur on mesal side).

0.025 mm

14



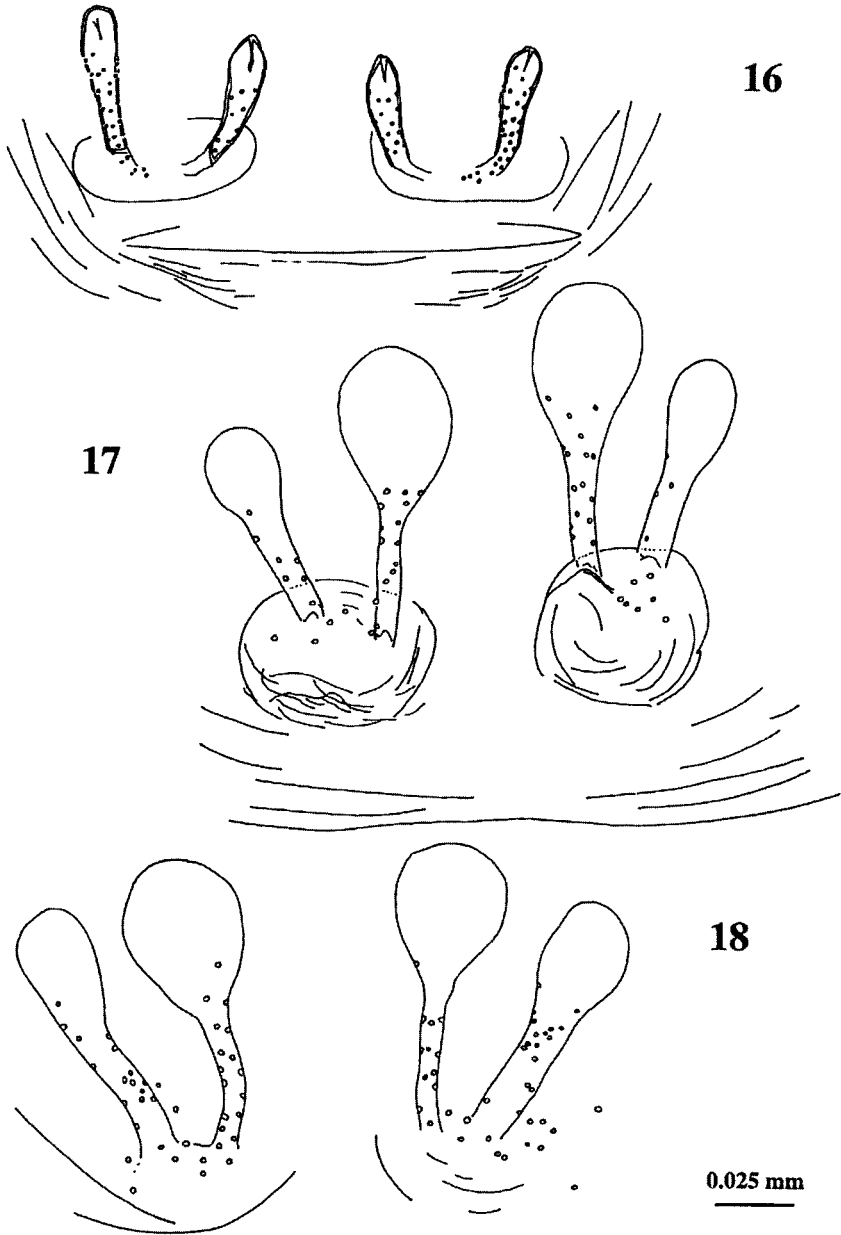
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Figs. 14-15:

Surazomus arboreus n.sp. females.

14: ventral view of left spermathecum from E13-TM; 15: ventral view of spermathecae from 50D-TM.

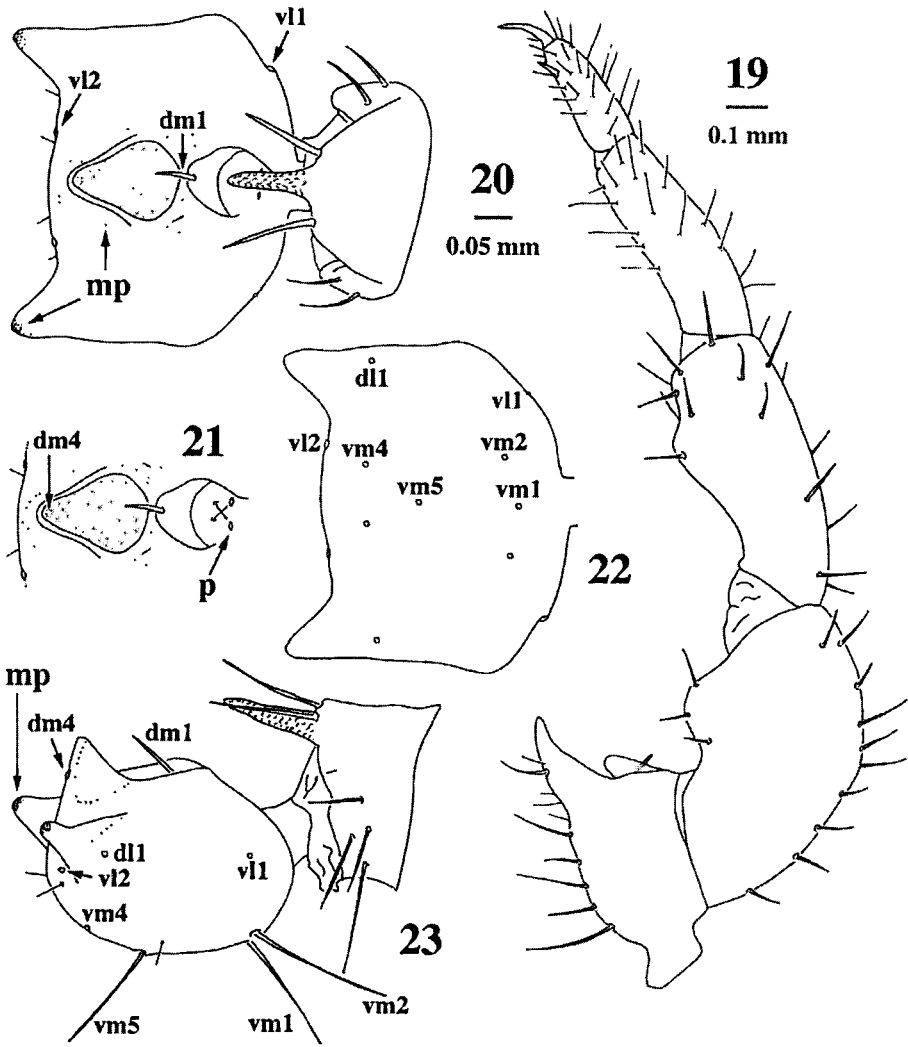


Figs. 16-18:

Ventral views of female spermathecae.

16: holotype of *Surazomus boliviensis* n.sp.; 17-18: *Surazomus brasiliensis* Kraus;

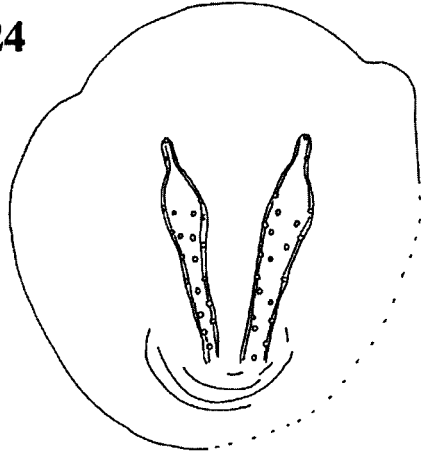
17: from R22-RD9; 18: from K18-CPA.



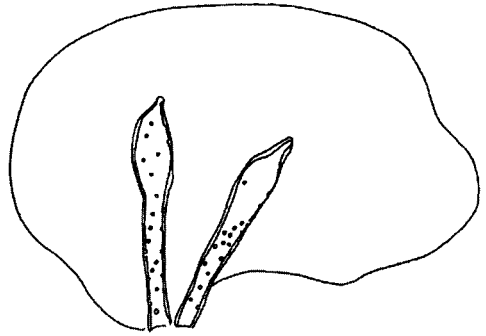
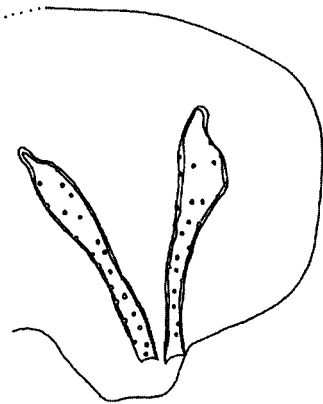
Figs. 19-23:
Surazomus manaus n.sp. male holotype.
 19: lateral view of left pedipalp; 20: dorsal view of flagellum; 21: dorsal view of central portion of flagellum, without overhanging posterodorsal process; 22: ventral view of flagellum; 23: right lateral view of flagellum (p = pore, mp = micropore).

0.025 mm

24



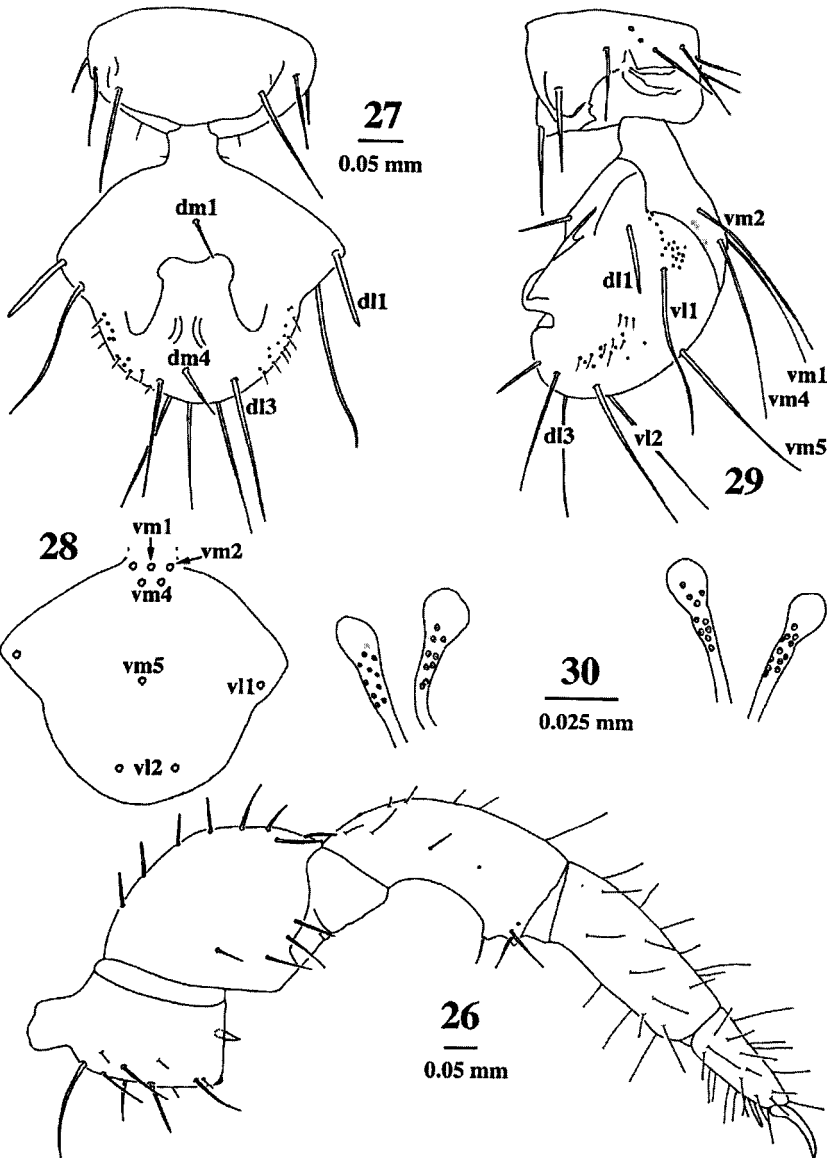
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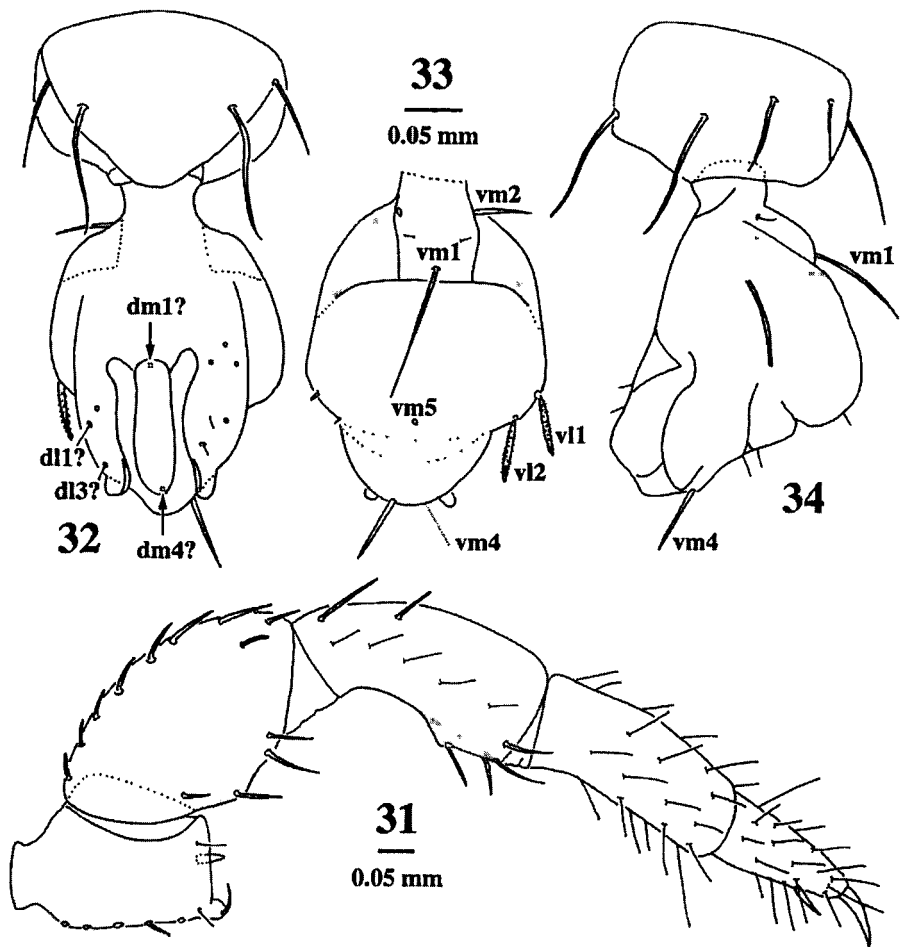
Figs. 24-25:

Surazomus manaus n.sp. females.

24: ventral view of paratype (K30-CI, 25.9.85) left spermathecum; 25: ventral view of allotype spermathecae.



Figs. 26-30:
Surazomus mirim n.sp.; 26-29 male holotype, 30 female allotype.
 26: lateral view of right pedipalp; 27: dorsal view of flagellum; 28: ventral view of flagellum; 29: right lateral view of flagellum; 30: ventral view of spermathecae.



Figs. 31-34:

Surazomus rodriguessi n.sp. male holotype.

31: lateral view of right pedipalp; 32: dorsal view of flagellum; 33: ventral view of flagellum; 34: right lateral view of flagellum.