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A new schendylid centipede (Myriapoda: Chilopoda: Geophilomorpha) from the Bolivian Amazon Forest

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Abstract

Schendylops grismadoi **sp. nov.**, a new schendylid centipede (Chilopoda: Geophilomorpha) from the Amazon forest of east-central Bolivia (Santa Cruz Department, Guarayos Province) is described and illustrated based on the holotype female. The new species is characterized by having an uninterrupted series of ventral pore-fields, from first to penultimate sternite inclusive (undivided on anterior and posterior sternites, divided in two subsymmetrical areas on the intermediate); these combined traits being shared by five other Neotropical species currently included in the genus *Schendylops* Cook, 1899, *i.e., S. tropicus* (Brölemann & Ribaut, 1911) (from French Guiana), *S. inquilinus* Pereira, Uliana & Minelli, 2007 (from Brazil), *S. coscaroni* (Pereira & Minelli, 2006) (from Brazil), *S. demelloi* (Verhoeff, 1938) (from Brazil), and *S. parahybae* (Chamberlin, 1914) (from Brazil). The new taxon is differentiated from all aforementioned species by having the anterior margin of cephalic plate conspicuously notched in the middle, dentate lamellae of mandibles divided in two blocks, and basal internal edge of forcipular tarsungulum with a small pigmented tooth; it is included in a key which will enable the identification of all known Neotropical members having sternal pore-fields all along the trunk (including those with an interrupted series on some mid-body sternites). *S. grismadoi* is only the fifth species of geophilomorph centipede recorded from Bolivia.

Key words: Chilopoda, Geophilomorpha, Schendylidae, *Schendylops*, new species, Bolivia, Amazon forest, Neotropical Region

Introduction

The centipede genus *Schendylops* Cook, 1899 is one of the most widespread and diversified genera of the geophilomorph family Schendylidae, showing an amphiatlantic pattern of distribution (Hoffman & Pereira 1997; Morrone & Pereira 1999; Bonato *et al*. 2009; Pereira *et al.* 2004; Pereira 1998, 2008a). The genus embraces species in the 7–70 mm range of total body length and 27–87 leg-bearing segments (27 being the lowest number recorded up to the present in the centipede order Geophilomorpha [Minelli 2003; Minelli *et al*. 2000, 2009; Pereira 2013]).

Of the 67 species currently included in the taxon, 55 (in addition to the new species described below) occur in the Neotropics, while seven are known from mainland Africa and five from Madagascar. The Neotropical members are distributed as follows: one occurs in Argentina and Paraguay; 11 in Argentina only; two in Paraguay only; two in Bolivia; one in Brazil and Peru; 22 in Brazil only; one in Colombia; two in continental Ecuador and one in the Galapagos Islands; one in Guyana; one in French Guiana; five in Peru only; one in Puerto Rico, and the French Antilles (Guadeloupe); one in Venezuela, the British Virgin Is. (Virgin Gorda), and French Antilles (Martinique); two in Venezuela only; and one in Suriname. These taxa can be found in a wide variety of habitats, at altitudes ranging from sea level (*e.g.,* littoral species inhabiting the Caribbean area and Brazilian coasts of Rio de Janeiro State), up to *ca.* 4500 m a.s.l. (high altitude species living in the Andes). A detailed account of the geographic distribution of New World species of *Schendylops* can be found in Morrone & Pereira (1999).

In the present contribution a new species of the genus is described from the Bolivian Amazon forest, on the basis of an adult female specimen collected in a selective logging area (La Chonta forestry concession). La Chonta is

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a 100,000 ha area located within the Guarayos Forest Reserve (15º37´S to 15º56´S, 62º16´W to 63º0´W) (Pinard *et al*. 1999). It lies in a gently rolling terrain at the southern edge of the Amazon Basin in east-central Bolivia (Santa Cruz Department, Guarayos Province) (Fig. 98). The dominant soils are oxisols, ultisols, and inceptisols; it is a seasonally dry humid tropical forest and it supports tree species that are characteristic of both the humid forests of the Amazon Basin and the drier Chiquitano forest to the south (Park *et al.* 2005). The forest has an average elevation of 320 m (range 230–390m); the mean annual temperature is 25° C with a mean annual precipitation of approximately 1560 mm; the region experiences a distinct dry season from May to October, which is occasionally broken by Antarctic cold fronts that bring 1–2 days of rain (Felton *et al.* 2006, 2007; Park *et al.* 2005).

The two species of *Schendylops* currently recorded from Bolivia are *S. bolivianus* (Silvestri, 1897) from Caiza, at about 700 m a.s.l. (Tarija Department: Gran Chaco Province) and *S. potosius* (Chamberlin, 1955) from 30 miles N of Potosi, at 3900 m a.s.l. in the Andes (Potosi Department: Tomás Frías Province). *Schendylops grismadoi* **sp. nov.** (described below) is the third species of the genus to be reported from the country.

The new taxon is characterized by having an uninterrupted series of sternal pore-fields all along the trunk, this trait being shared by 29 other Neotropical members of the genus, *i.e.*, *S. amazonicus* (Pereira, Minelli & Barbieri, 1994) (from Brazil); *S. bakeri* (Chamberlin, 1914) (from Brazil); *S. bolivianus* (Silvestri, 1897) (from Bolivia); *S. borellii* (Silvestri, 1895) (from Paraguay); *S. brasilianus* (Silvestri, 1897) (from Brazil); *S. colombianus* (Chamberlin, 1921) (from Colombia); *S. continuus* (Pereira, Minelli & Barbieri, 1995) (from Brazil); *S. coscaroni* (Pereira & Minelli, 1996) (from Brazil); *S. demelloi* (Verhoeff, 1938) (from Brazil); *S. elegantulus* (Meinert, 1886) (from Argentina); *S. fieldi* (Chamberlin, 1944) (from Argentina); *S. gounellei* (Brölemann, 1902) (from Brazil); *S. iguapensis* (Verhoeff, 1938) (from Brazil); *S. inquilinus* Pereira, Uliana & Minelli, 2007 (from Brazil); *S. labbanus* (Chamberlin, 1921) (from Guyana); *S. lesnei* (Brölemann & Ribaut, 1911) (from Brazil); *S. longitarsis* (Silvestri, 1895) (from Argentina and Paraguay); *S. madariagensis* (Pereira, 1981) (from Argentina); *S. marchantariae* (Pereira, Minelli & Barbieri, 1995) (from Brazil and Peru); *S. mesopotamicus* (Pereira, 1981) (from Argentina); *S. olivaceus* (Crabill, 1972) (from Brazil); *S. pampeanus* (Pereira & Coscarón, 1976) (from Argentina); *S. paraguayensis* (Silvestri, 1895) (from Paraguay); *S. parahybae* (Chamberlin, 1914) (from Brazil); *S. paulista* (Brölemann, 1905) (from Brazil); *S. sublaevis* (Meinert, 1870) (from Brazil); *S. tropicus* (Brölemann & Ribaut, 1911) (from French Guiana); *S. varipictus* (Chamberlin, 1950) (from Puerto Rico); and *S. verhoeffi* (Brölemann & Ribaut, 1911) (from Brazil).

A key presented below will enable the identification of most abovementioned species, including the new taxon described herein, and five additional Neotropical members having an interrupted series of sternal pore-fields on some mid-body sternites, *i.e., S. achalensis* Pereira, 2008 (from Argentina), *S. demangei* (Pereira, 1981) (from Argentina), *S. demartini* (Pereira & Minelli, 1996) (from Argentina), *S. minutus* (Pereira & Minelli, 1993) (from Venezuela), and *S. placcii* (Pereira & Minelli, 1996) (from Argentina).

Material and methods

The holotype hereby designated is deposited at the Colección Boliviana de Fauna, La Paz, Bolivia (CBF).

A dissection was performed utilizing a stereomicroscope and standard dissecting tools. The specimen described herein was examined and illustrated in detail, using a compound microscope equipped with a drawing tube attachment (the latter was used to delineate the figures and also to draw scale bars at their sides with the aid of a glass stage-micrometer). Temporary mounts have been prepared by direct transfer of the specimen from the preservation liquid (70% ethanol) onto microscope slides, using undiluted 2-Phenoxyethanol (CAS # 122-99-6) as a clearing agent and mounting medium. No additional steps were carried out before mounting. The slides were temporarily stored in hermetic acrylic boxes to avoid evaporation of this fluid. Details of the preparation of microscope slides and dissection procedures are described in Pereira (2000) and Foddai *et al*. (2002). All measurements are given in mm (taken at once as explained above). Terminology for external anatomy follows Bonato *et al*. (2010). The following abbreviation was used in the text, tables, and legends of the figures: a.a. - antennal article/articles.

Results

Family Schendylidae

Genus *Schendylops* Cook, 1899

Diagnosis. This taxon can be distinguished from all other genera currently recognized in the family Schendylidae by the following unique combination of features. Second maxillae: pleurites not fused to the posterior internal border of the coxosternite; apical claw of telopodites of second maxillae pectinate on both dorsal and ventral edges. Sternites of leg-bearing segments with pore-fields. Ultimate leg-bearing segment: ultimate legs with seven articles; pretarsus in form of a small hairy tubercle or replaced by a small spine or altogether absent; each coxopleuron with two internal coxal organs of simple structure ("homogeneous coxal glands" *sensu* Brölemann & Ribaut 1912).

Type species of the genus. *Schendyla grandidieri* Saussure & Zehnter, 1897, by original designation.

Remarks. Most of the Neotropical species of *Schendylops* are listed in Pereira & Minelli (1993); Hoffman & Pereira (1997); Morrone *et al.* (1999); Foddai *et al.* (2000); Minelli (2006). Besides the new species described below, the following four taxa should be added to those lists: *Schendylops achalensis* Pereira, 2008 (from Argentina: Córdoba Province: Pampa de Achala); *Schendylops inquilinus* Pereira, Uliana & Minelli, 2007 (from Brazil: Mato Grosso State: Pantanal de Poconé); *Schendylops jeekeli* Pereira, 2009 (from Brazil: São Paulo State: Santo André Municipio: Paranapiacaba [Alto da Serra]); and *Schendylops ramirezi* Pereira, 2013 (from Brazil: Rio de Janeiro State: Ilha Grande, [Praia Grande das Palmas]).

Schendylops grismadoi sp. nov.

(Figs. 1–59)

Diagnosis. A Neotropical species of *Schendylops* with pore-field area on first sternite; pore-fields present in an uninterrupted series all along the body; pore-fields undivided on anterior and posterior sternites, divided in two subsymmetrical areas on intermediate sternites; posterior limit of ventral pore-field series on penultimate sternite. The other Neotropical members of the genus sharing these combined traits are *S. tropicus* (Brölemann & Ribaut, 1911), *S. inquilinus* Pereira, Uliana & Minelli, 2007, *S. coscaroni* (Pereira & Minelli, 1996), *S. demelloi* (Verhoeff, 1938), *and S. parahybae* (Chamberlin, 1914). *S. grismadoi* **sp. nov.** differs from the latter taxa by having the following unique traits: anterior margin of cephalic plate conspicuously notched in the middle (Fig. 10); dentate lamellae of mandibles divided in two blocks (Figs. 13–15); basal internal edge of forcipular tarsungulum with a small pigmented tooth (Figs. 21–23).

Other morphological traits included in Table 2 differentiate *S. grismadoi* **sp. nov.** from the other five abovementioned species.

Remarks. For details on features differentiating *S. grismadoi* **sp. nov**. from some other Neotropical species of *Schendylops*, see comments on morphological similarities below, and Table 3.

The new species can be separated from the Neotropical members of *Schendylops* having sternal pore-fields all along the body, by using the identification key below.

Type material examined. BOLIVIA: Santa Cruz Department: Guarayos Province: 15º 42′ 42′′ S, 62º 46′ 20′′ W (La Chonta forestry concession), 330 m a.s.l., Amazon forest, 26–30 October 2010, C. J. Grismado, M. R. Vacaflores & M. Pérez leg.: holotype ♀ 45 leg-bearing segments, body length 27 mm.

Depository of type. CBF.

Description. Female holotype. Forty-five leg-bearing segments, body length 27 mm, maximum body width 0.85 mm, maximum width of cephalic plate 0.57 mm, length of cephalic plate 0.59 mm, maximum width of forcipular coxosternite 0.78 mm. Colour (of preserved specimen in alcohol): head, forcipular segment and leg-bearing segments 1–7 (-8) bright ferrugineous, rest of the body pale orange-brownish.

Antennae. About 3.1 times as long as the cephalic plate, distally attenuate, ratio of width of a.a. I/width of a.a. XIV *ca.* 2.29: 1, width of a.a. II/width of a.a. XIV *ca.* 1.75: 1. A.a. I nearly as long as wide, all remaining a.a. longer than wide. Ventral chaetotaxy: setae on a.a. I–IV of various lengths and relatively few in number; those of a.a. V–XIV progressively shorter and more numerous towards the tip of the appendage (Fig. 1). Dorsal chaetotaxy: setae on a.a. I–IV similar to the ventral side, setae on remaining a.a. a little longer and slightly less numerous. A.a.

XIV with *ca.* 16 claviform sensilla on the external margin and *ca.* 6 on the internal margin (Fig. 2: c); distal end of this a.a. with *ca.* 5 small hyaline specialized sensilla ending in three small apical branches (Fig. 2: d). Ventral and dorsal surface of a.a. II (Figs. 3, 6), V (Figs. 4, 7), IX (Figs. 5, 8) and XIII (Figs. 2, 9) with very small specialized sensilla placed on hyaline, unreticulated, unpigmented areas. On the ventral side these sensilla are placed on the middle and internal latero-apical area and are represented by two different types (*a* and *b*). Type *a* sensilla very thin and not split apically (Fig. 5: a), type *b* sensilla (Fig. 5: b) very similar to those of the apex of a.a. XIV. Specialized sensilla on dorsal side restricted to a middle and external latero-apical areas and are represented by three different types: *a* and *b* similar to *a* and *b* of ventral side (Fig. 7: a, b) and type *c* sensilla, similar to type *b*, but darker (ochreous in color) (Fig. 7: c). Relative position of specialized sensilla on ventral and dorsal surfaces of the specified a.a. as in Figs. 2–5 and 6–9 respectively. Number and distribution of type *a, b,* and *c* sensilla as in Table 1.

TABLE 1. Number of type *a, b and c* sensilla on antennal articles II, V, IX and XIII in the female holotype of *Schendylops grismadoi* **sp. nov**.

	Ventral		Dorsal			Figs.
	a	b	a	b	c	
II	-	1	1	2	-	3, 6
V	1	2	1	2	1	4, 7
IX	1	1	1	2	3	5, 8
XIII	1	1	1	1	4	2, 9

Cephalic plate. Nearly as long as wide, anterior margin strongly notched in the middle (Fig 10: a), lateral margins slightly concave anteriad, covex on remaining parts, posterior margin concave. Shape and chaetotaxy as in Fig. 10.

Clypeus. With 1+1 postantenal setae, 9+8 median setae and 1+1 prelabral setae (Fig. 11).

Labrum. Mid-piece with 15 sclerotized pigmented teeth, of which the eleven most central are round tipped, and the 2+2 lateral have an acute apex (Fig. 12). Side pieces with 4+5 less sclerotized teeth, each with a very sharp medial extension (Fig. 12).

Mandible. Dentate lamellae subdivided into two distinct blocks, with 5, 6 teeth in the right mandible (Fig. 15) and 3, 8 in the left (Figs. 13, 14), pectinate lamella with *ca.* 21 hyaline teeth.

First maxillae. Coxosternite and telopodites with well developed lappets (Fig. 16). Coxosternite with 2+2 setae; coxal projections subtriangular, round tipped and provided with 1+1 large setae and 0+1 small setae (Fig. 17). Article 2 of telopodites with 3+3 ventral setae (Fig. 17) and 5+5 dorsal sensilla (Fig. 16).

Second maxillae. Coxosternite bearing 11+10 setae with relative size and arrangement as in Fig. 17. Shape of postero-external regions as in Figs. 18–19. Apical claw of telopodites well developed, bipectinate, ventral edge (Fig. 20) with *ca.* 14 teeth, dorsal edge with *ca.* 16–18 teeth.

Forcipular segment. When closed the telopodites do not reach the anterior margin of the head. Forcipular tergite trapeziform, with anterior margin concave, lateral margins straight converging anteriad (Fig. 22); chaetotaxy represented by an irregular transverse median row of *ca.* 6 large setae and other additional smaller setae distributed on the remaining surface (Fig. 22). Telopodites with trochanteroprefemur, femur and tibia unarmed (Figs. 21, 22). Tarsungulum with a small pigmented tooth on the basal internal edge (Figs. 21–23). Length/width ratio of forcipular trochanteroprefemur *ca.* 1.27: 1. Calyx of poison gland cylindrical (Fig. 23: b). Shape and chaetotaxy of coxosternite and telopodites as in Figs. 21, 22.

Sternites of leg-bearing segments 1 to penultimate. Ventral glands pale yellow in color; pore-fields present in an uninterrupted series from sternite 1 to penultimate inclusive. Fields undivided on sternites 1–15 and 40–44, divided in two subsymmetrical areas on sternites 16–39. Pore-field on sternite 1 accompanied by two additional pores on the right side and one on the left side of the anterior border (Fig. 24). Pore-fields on sternites 3–9 accompanied by one-two additional pores at each lateral border, some of them virtually integrated to the main pore-field area, Figs. 26, 27, 28, 29, 30, 31 (sternites 3, 4, 5, 7, 8, 9 respectively). Shape and relative size of fields changing along the trunk as in Figs. 24–44. Number of pores on selected sternites as follows: sternite 1 (2+17+1 pores); 2 (52); 3 (1+72+1); 4 (1+84+1); 5 (1+83+1); 7 (2+92+1); 8 (2+88+2); 9 (2+99+0); 10 (99); 15 (0+92+1); 16 (47+50); 17 (34+32); 27 (16+13); 34 (14+12); 35 (11+19); 39 (12+15); 40 (42); 41 (44); 42 (49); 43 (60); 44 (42).

TABLE 2. Differential characters of *Schendylops grismadoi* **sp. nov.**, *S. tropicus* (Brölemann & Ribaut, 1911), *S. inquilinus* Pereira, Uliana & Minelli, 2007, *S. coscaroni* (Pereira & Minelli, 1996), *S. demelloi* (Verhoeff, 1938), *and S. parahybae* (Chamberlin, 1914).

	S. grismadoi	*S. tropicus*	*S. inquilinus*	*S. coscaroni*	*S. demelloi*	*S. parahybae*
Number of leg-bearing segments	♀: 45 ♂: ?	♀: 47 ♂: ?	♀: 53, 55 ♂: 51, 53	♀: 51 ♂: 49	♀: 69 ♂: 69	♀: 59 ♂: ?
Body length	27 mm (♀)	16 mm (♀)	31 mm (♀) 29 mm (♂)	28 mm (♀) 36 mm (♂)	70 mm (♀) 51 mm (♂)	38 mm (♀)
Body width	0.85 mm (♀)	0.7 mm (♀)	0.8 mm (♂)	1.2 mm (♀)	2.0 mm (♀) 1.8 mm (♂)	1.0 mm (♀)
Anterior margin of cephalic plate conspicuously notched in the middle	yes (Fig. 10)	no	no (Fig. 75)	no	no	no
Proximal a.a. with few setae of different lengths	♀: I – IV	?	♀ and ♂: I-III (-IV)	♀: I-III (-IV) ♂: I	♀: I-II ♂: I	?
Female antennae: a.a. I about as long as wide	yes (Fig. 1)	no, slightly longer than wide	no, wider than long (Fig. 74)	yes	no, conspicuously wider than long	?
Number of claviform sensilla on external edge of a.a. XIV	*ca.* 16	?	*ca.* 20	*ca.* 20-23	*ca.* 40	?
Specialized sensilla on a.a. II, V, IX, and XIII placed on hyaline, unreticulated, unpigmented surface	yes	?	yes	yes	no	?
Antennae sexually dimorphic	?	?	no	yes	yes	?
Number of clypean median setae	*ca.* 9+8	*ca.* 10+10	*ca.* 10+10	*ca.* 17+17	*ca.* 15+14	?

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TABLE 2. (Continued)

	S. grismadoi	*S. tropicus*	*S. inquilinus*	*S. coscaroni*	*S. demelloi*	*S. parahybae*
Number of teeth on labrum mid-piece	*ca.* 15	*ca.* 13-14	*ca.* 11	*ca.* 16	*ca.* 19	?
Number of blocks of dentate lamellae of mandibles	two (Figs. 13-15)	three	three (Fig. 76)	three	three	three
Coxosternite of first maxillae with a wide median longitudinal sulcus (not reaching the anterior and posterior margins)	no	yes	no	no	no	?
Number of setae on coxosternite of first maxillae	2+2	2+2	2+2	2+2	*ca.* 14+11	?
Number of setae on coxal projections of first maxillae	*ca.* 1+1 large setae, and 0+1 small setae	?	*ca.* 1+1 large setae, and 1+1 small sensilla	*ca.* 3+2 large setae	*ca.* 6+8 large setae	?
Number of ventral setae on apical article of telopodites of first maxillae	*ca.* 3+3	?	*ca.* 3+3	*ca.* 5+5	*ca.* 17+16	?
Number of setae on coxosternite of second maxillae	*ca.* 11+10 (relative size and distribution as in Fig. 17)	*ca.* 9+9	*ca.* 12+13 (relative size and distribution as in Fig. 77)	*ca.* 17+17 (relative size and distribution as in Fig. 60)	*ca.* 26+34 (relative size and distribution as in Fig. 67)	?
Shape of postero-external areas of second maxillae	as in Figs. 18, 19	?	as in Fig. 78	as in Fig. 61	as in Fig. 67	?
Number of teeth on ventral and dorsal edges of apical claws of telopodites of second maxillae	*ca.* 14-18	*ca.* 7-10	*ca.* 17	*ca.* 24-26	*ca.* 26	?

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TABLE 2. (Continued)

	S. grismadoi	*S. tropicus*	*S. inquilinus*	*S. coscaroni*	*S. demelloi*	*S. parahybae*
Number of setae on forcipular tergite	with a an irregular transverse median row of *ca.* 6 large setae and a few additional smaller setae (Fig. 22)	?	with an irregular transverse median row of *ca.* 11 large setae and a few additional smaller setae	with an irregular transverse median row of *ca.* 12 large setae and a few additional smaller setae	with *ca.* 90 setae dispersed on almost whole surface	with an irregular transverse median row of *ca.* 12 setae
Length/width ratio of forcipular trochanteroprefemur	*ca.* 1.27: 1	?	*ca.* 1.13: 1	*ca.* 1.30: 1	*ca.* 1.0: 1	*ca.* 1.33: 1
Basal internal edge of forcipular tarsungulum with a small pigmented tooth	yes (Figs. 21-23)	no	no	no	no	no
Sternal glands purple in color	no, pale yellow	?	yes	no, pale yellow	?	no, pale yellow
Shape of undivided sternal pore-fields of anterior region of the body	as in Figs. 25, 30, 32, 33 (sternites 2, 8, 10, 15 respectively)	as in Fig. 97 (sternite 14)	as in Figs. 79, 80, 81, 82 (sternites 2, 4, 10, 12 respectively)	as in Figs. 62, 63, 64 (sternites 2, 10, 16 respectively)	as in Figs. 68, 69 (sternites 6, 14 respectively)	as in Figs. 92, 93 (sternites 2, 14 respectively)
Position of additional pores accompanying the sternal pore-field main areas	anterolateral on sternite 1 (Fig. 24); midlateral on remaining sternites, Figs. 27, 28, 29, 30 (sternites 4, 5, 7, 8 respectively)	midlateral, virtually integrated to the pore-field area, Fig. 97 (sternite 14)	anterolateral on sternite 1; midlateral on remaining sternites, Fig. 80 (sternite 4)	anterolateral, Fig. 64 (sternite 16)	anterolateral, Fig. 68 (sternite 6)	anterolateral, Fig. 92 (sternite 2)
Number of pores on some selected sternites	1: *ca.* 2+17+1 2: *ca.* 52 7: *ca.* 2+92+1 15: *ca.* 0+92+1 antepenultimate: *ca.* 60 penultimate: *ca.* 42	14: *ca.* 87 penultimate: *ca.* 34	1: *ca.* 2+19+0 2: *ca.* 3+64+3 4: *ca.* 4+109+3 12: *ca.* 164 penultimate: *ca.* 1+57+1	1: *ca.* 7 2: *ca.* 6+65+7 16: *ca.* 2+231+3 penultimate: *ca.* 2+28+3	1: *ca.* 43 2: *ca.* 7+220+8 6: *ca.* 11+396+14 14: *ca.* 12+496+15 antepenultimate: *ca.* 3+375+6 penultimate: *ca.* 108	1: *ca.* 28 2: *ca.* 90 14: *ca.* 226 penultimate: *ca.* 96

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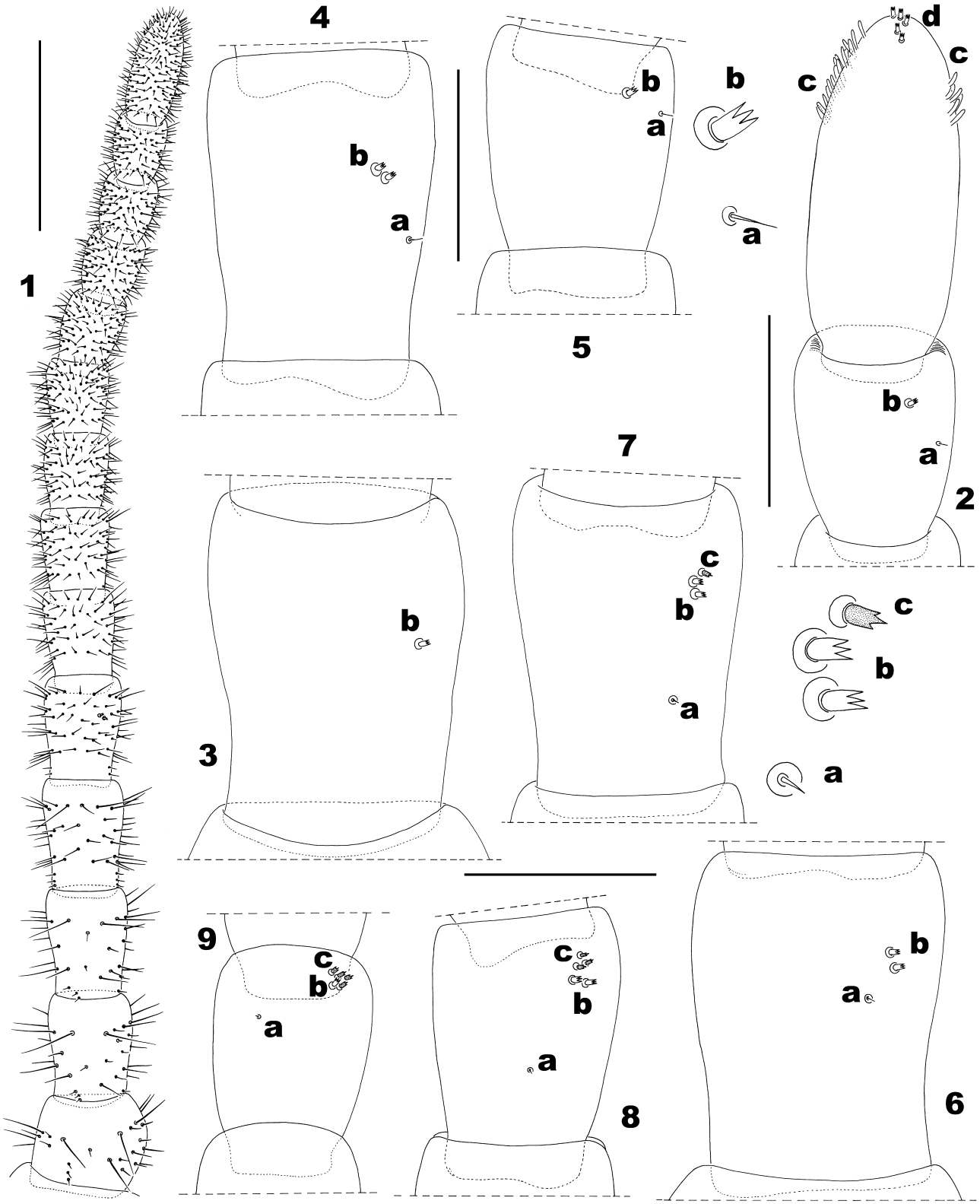
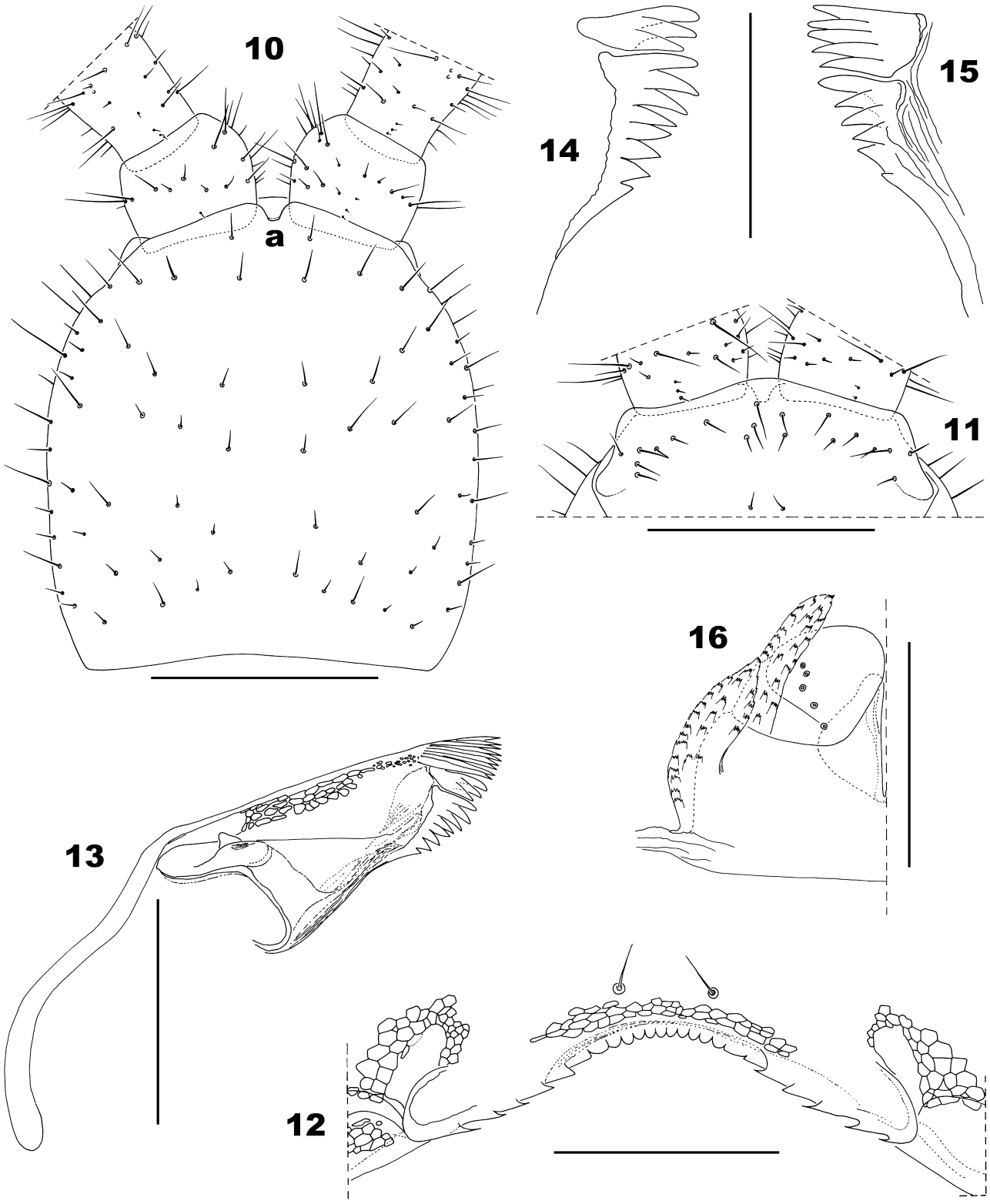
TABLE 2. (Continued)

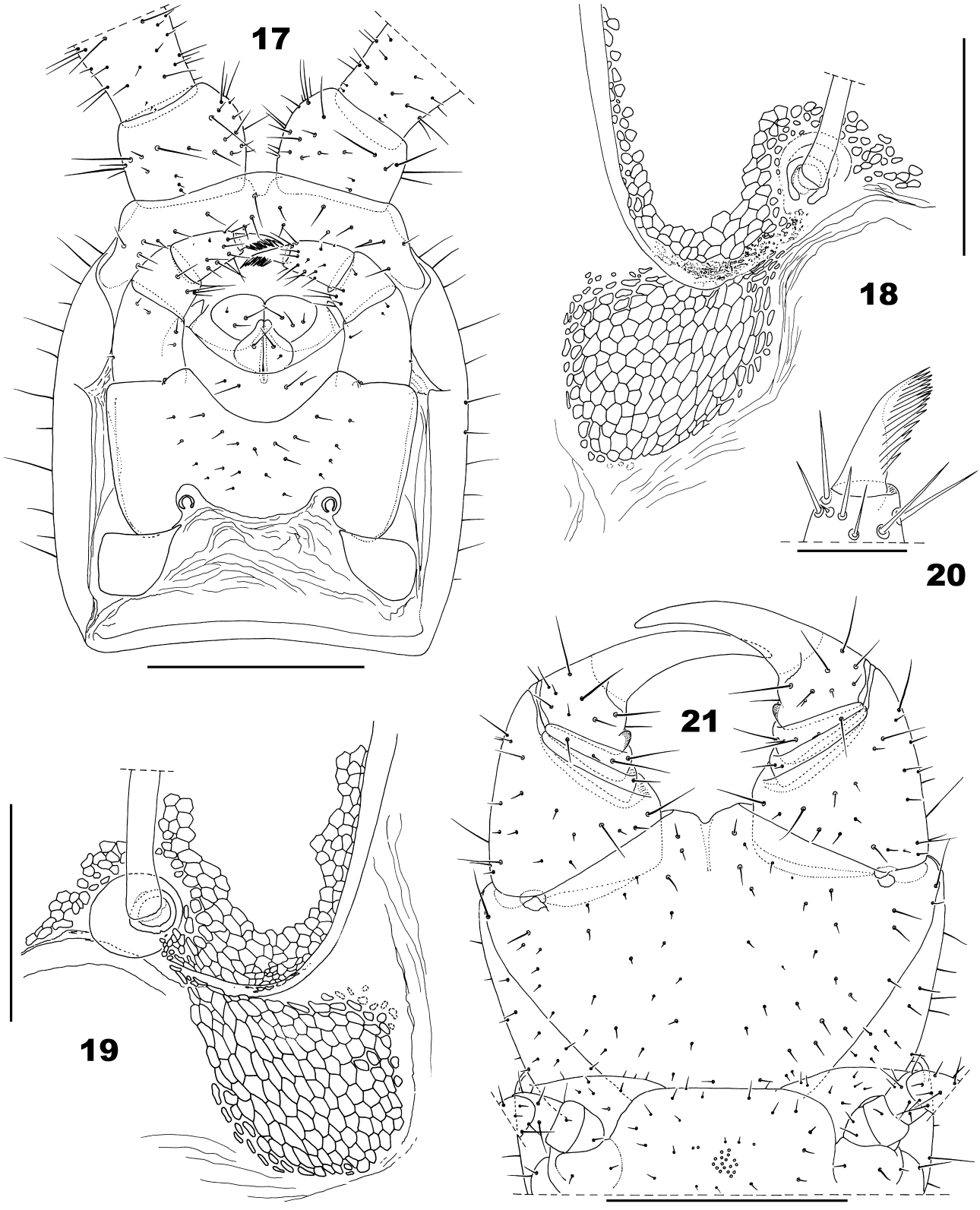
	S. grismadoi	*S. tropicus*	*S. inquilinus*	*S. coscaroni*	*S. demelloi*	*S. parahybae*
Ultimate leg-bearing segment: with intercalary pleurites at the sides of the ultimate pretergite	yes (Fig. 54)	yes	yes	yes	yes	no, absent (Fig. 94)
Width/length ratio of tergite of female ultimate leg-bearing segment	*ca.* 1.30: 1	?	*ca.* 1.32: 1	*ca.* 1.44: 1	*ca.* 1.60: 1	*ca.* 1.40: 1
Width/length ratio of sternite of female ultimate leg-bearing segment	*ca.* 1.40: 1	*ca.* 1.30: 1	*ca.* 1.23: 1	*ca.* 1.27: 1	*ca.* 1.50: 1	*ca.* 1.42: 1
Chaetotaxy of sternite of female ultimate leg-bearing segment	as in Fig. 55	with small numerous setae near the posterior edge	as in Fig. 83	as in Fig. 65	as in Fig. 70	as in Fig. 95
Posterior coxal organs externally bilobed	no (Fig. 58)	no	no (Fig. 84)	yes (Fig. 66)	no?	no (Fig. 96)
Female ultimate leg-bearing segment: ratio of length of telopodite of ultimate legs/length of sternite	*ca.* 4.0: 1	*ca.* 4.20: 1	*ca.* 3.80: 1	*ca.* 4.96: 1	*ca.* 4.92: 1	?
Female ultimate leg-bearing segment: ratio of width of tarsus 1/width of tarsus 2 of ultimate legs	*ca.* 1.25: 1	*ca.* 1.25: 1	*ca.* 1.40: 1	*ca.* 2.0: 1	*ca.* 2.10: 1	?
Female postpedal segments: intermediate sternite with a few large setae	yes (Fig. 55)	?	yes (Fig. 83)	yes (Fig. 65)	no (with *ca.* 75 small setae, Fig. 70)	yes (Fig. 95)



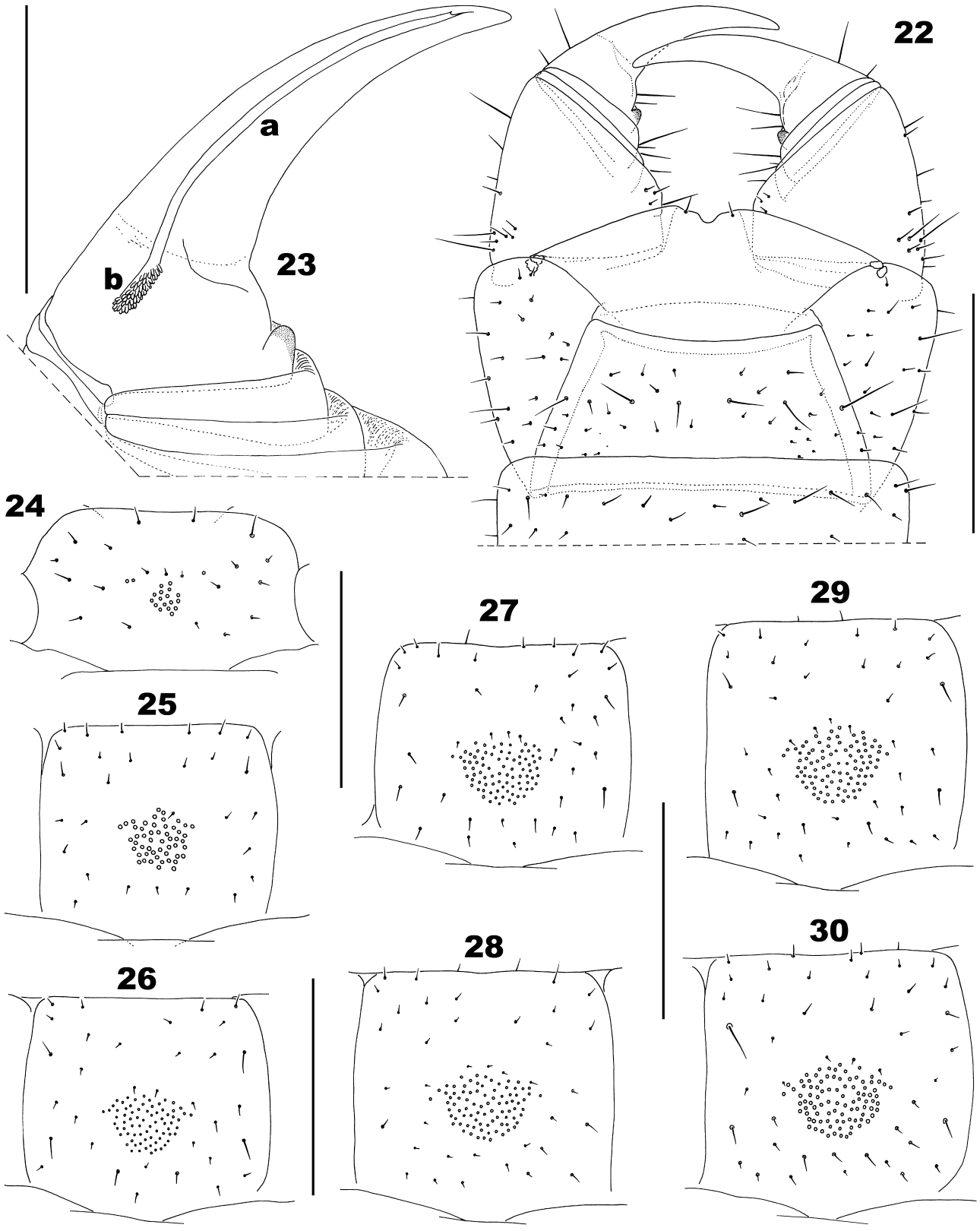
FIGURES 1–9. *Schendylops grismadoi* **sp. nov.** (female holotype; BOLIVIA: Santa Cruz Department: Guarayos Province: 15º 42′ 42′′ S, 62º 46′ 20′′ W): (1) Right antenna, ventral. (2) Right a.a. XIII and XIV, ventral (a, b: *a, b* type sensilla; c: claviform sensilla; d: apical specialized sensilla). (3) Right a.a. II, ventral (b: *b* type sensilla). (4) Right a.a. V, ventral (a, b: *a, b* type sensilla). (5) Right a.a. IX, ventral (a, b: *a, b* type sensilla). (6) Right a.a. II, dorsal (a, b: *a, b* type sensilla). (7) Right a.a. V, dorsal (a, b, c: *a, b, c* type sensilla). (8) Right a.a. IX, dorsal (a, b, c: *a, b, c* type sensilla). (9) Right a.a. IX, dorsal (a, b, c: *a, b, c* type sensilla). Scale bars: 0.3 mm (1); 0.1 mm (2–9).



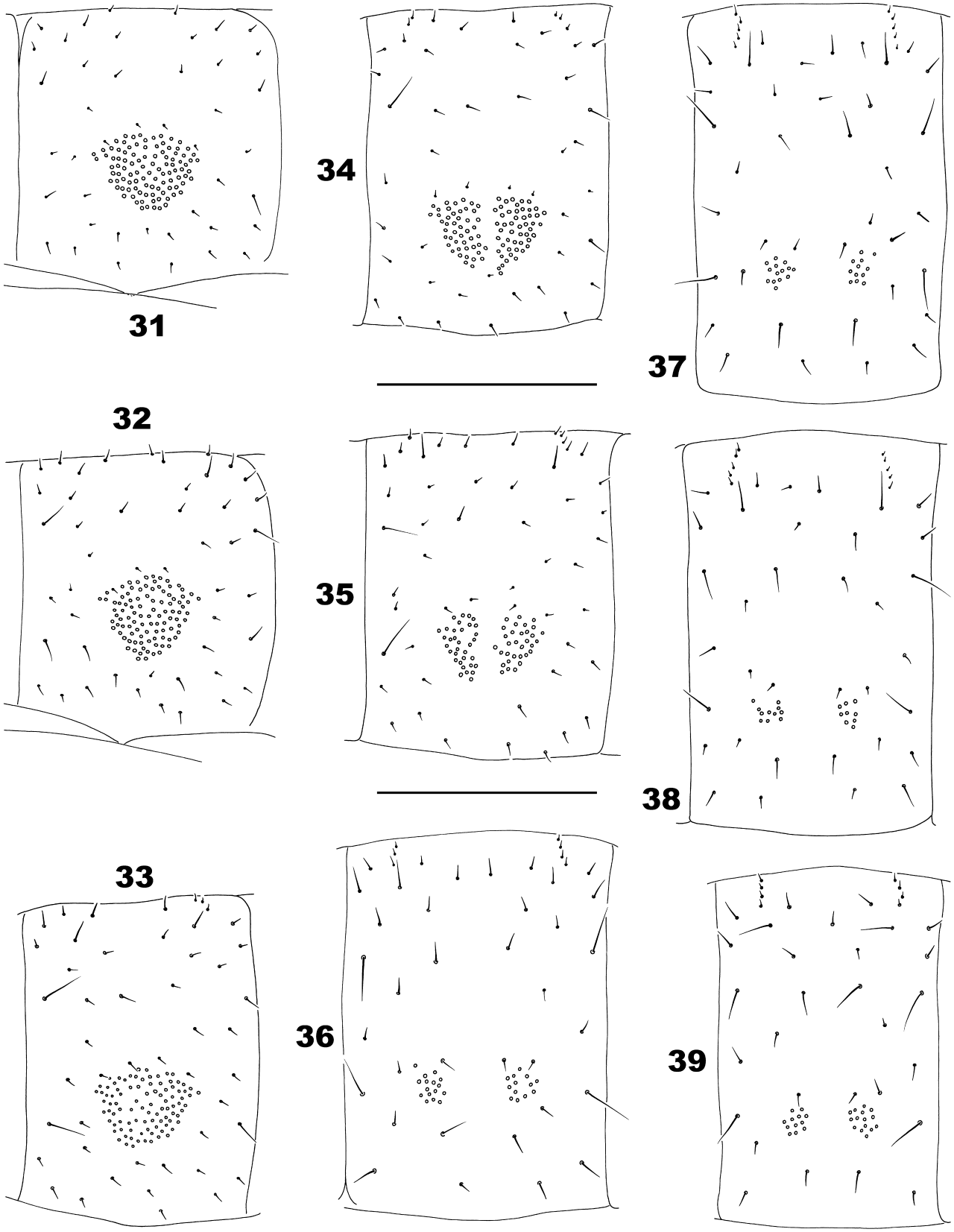
FIGURES 10–16. *Schendylops grismadoi* **sp. nov.** (female holotype; BOLIVIA: Santa Cruz Department: Guarayos Province: 15º 42′ 42′′ S, 62º 46′ 20′′ W): (10) Cephalic plate and bases of antennae (a: notch). (11) Clypeus and bases of antennae. (12) Labrum. (13) Left mandible, dorsal. (14) Dentate lamella of left mandible, dorsal. (15) Dentate lamella of right mandible, dorsal. (16) Left side of first maxillae, dorsal. Scale bars: 0.05 mm (14, 15); 0.1 mm (12, 13, 16); 0.3 mm (10, 11).



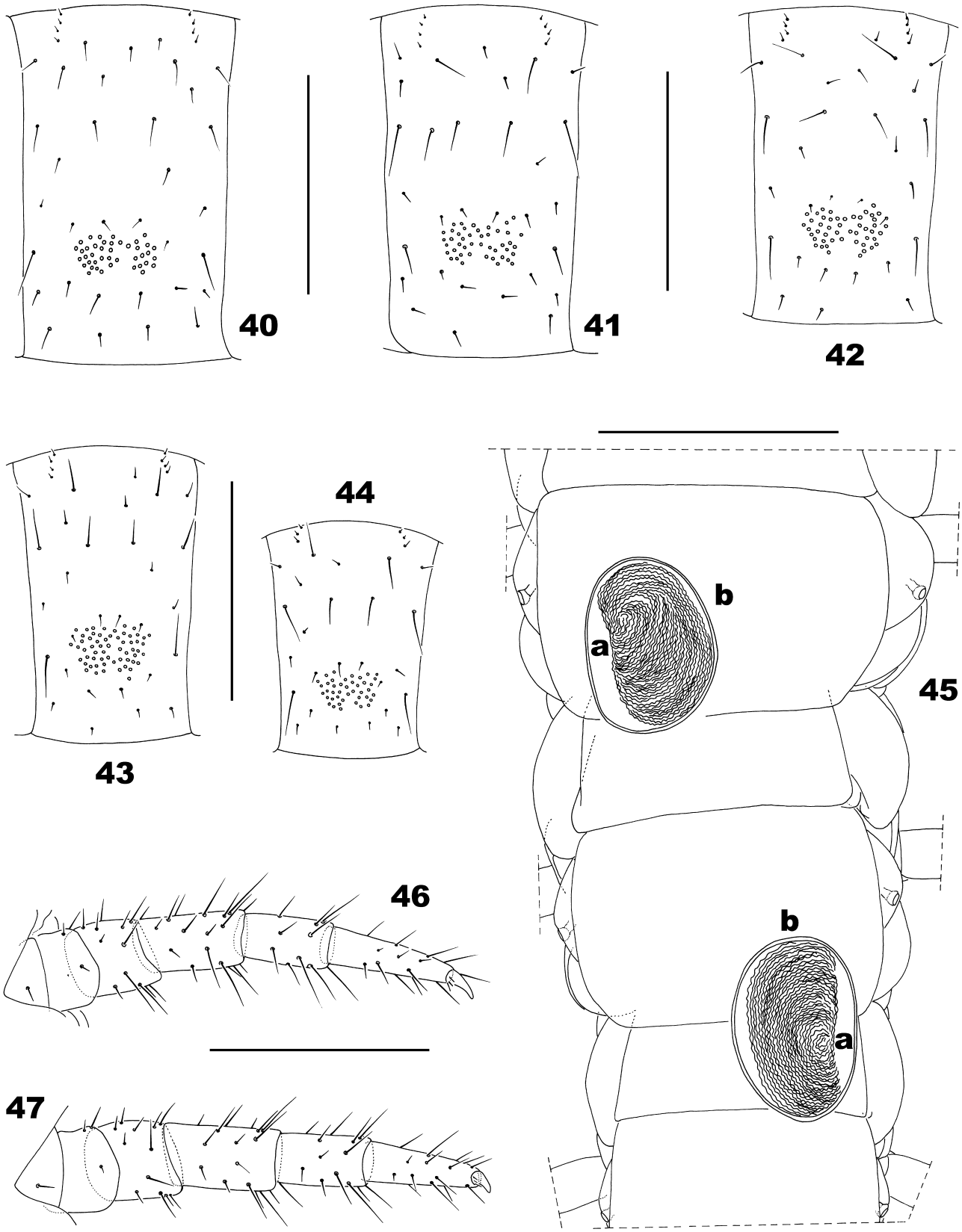
FIGURES 17–21. *Schendylops grismadoi* **sp. nov.** (female holotype; BOLIVIA: Santa Cruz Department: Guarayos Province: 15º 42′ 42′′ S, 62º 46′ 20′′ W): (17) Head, bases of antennae, first and second maxillae, ventral. (18) Detail of left postero-external region of second maxillae, dorsal. (19) Detail of right postero-external region of second maxillae, dorsal. (20) Claw of right telopodite of second maxillae, ventral. (21) Forcipular segment, ventral. Scale bars: 0.05 mm (20); 0.1 mm (18, 19); 0.3 mm (17); 0.4 mm (21).



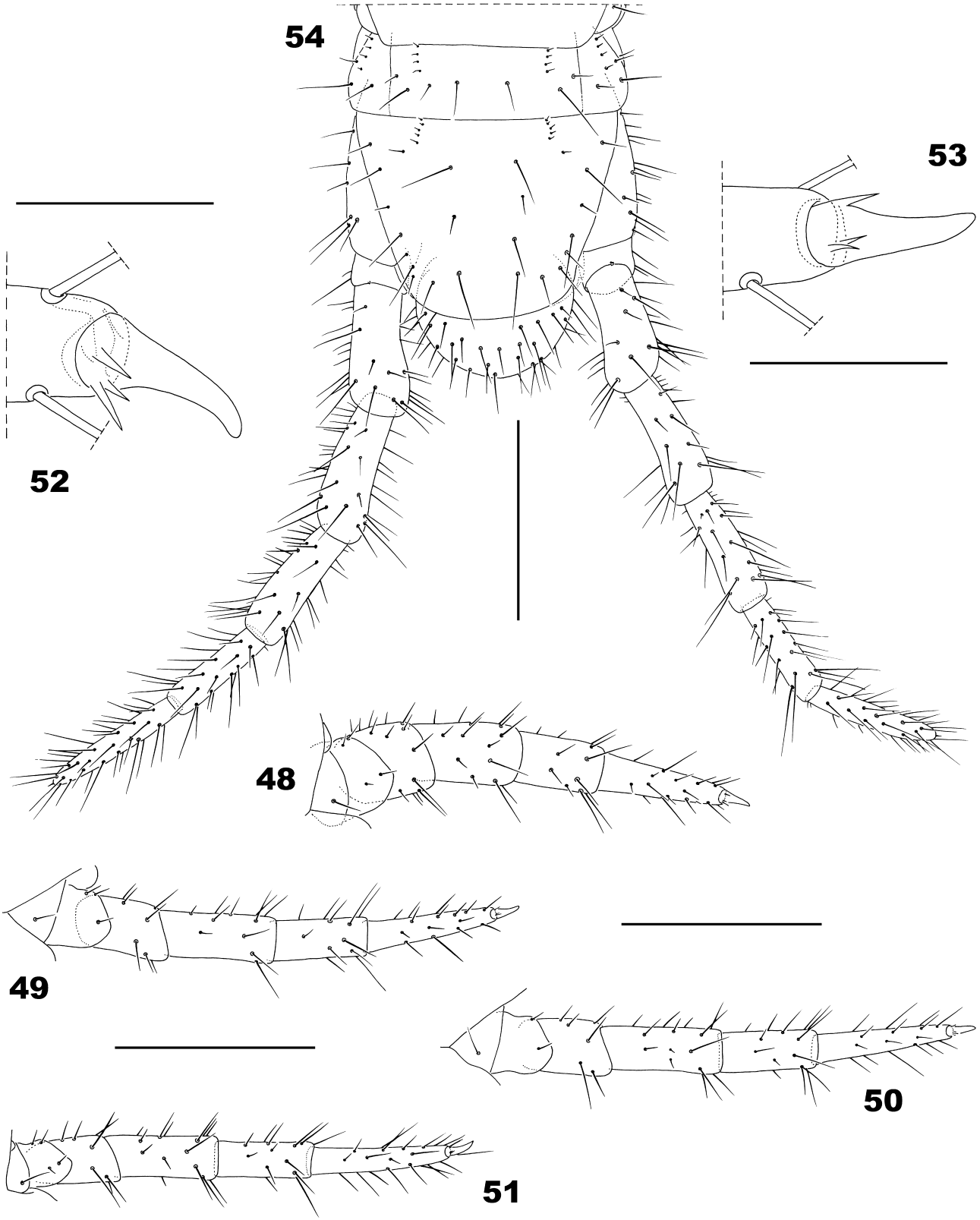
FIGURES 22–30. *Schendylops grismadoi* **sp. nov.** (female holotype; BOLIVIA: Santa Cruz Department: Guarayos Province: 15º 42′ 42′′ S, 62º 46′ 20′′ W): (22) Forcipular segment, dorsal. (23) Detail of duct (a) and calyx (b) of venom apparatus in right forcipular telopodite, ventral. (24) Sternite 1. (25) Sternite 2. (26) Sternite 3. (27) Sternite 4. (28) Sternite 5. (29) Sternite 7. (30) Sternite 8. Scale bars: 0.2 mm (23); 0.3 mm (24–30); 0.4 mm (22).



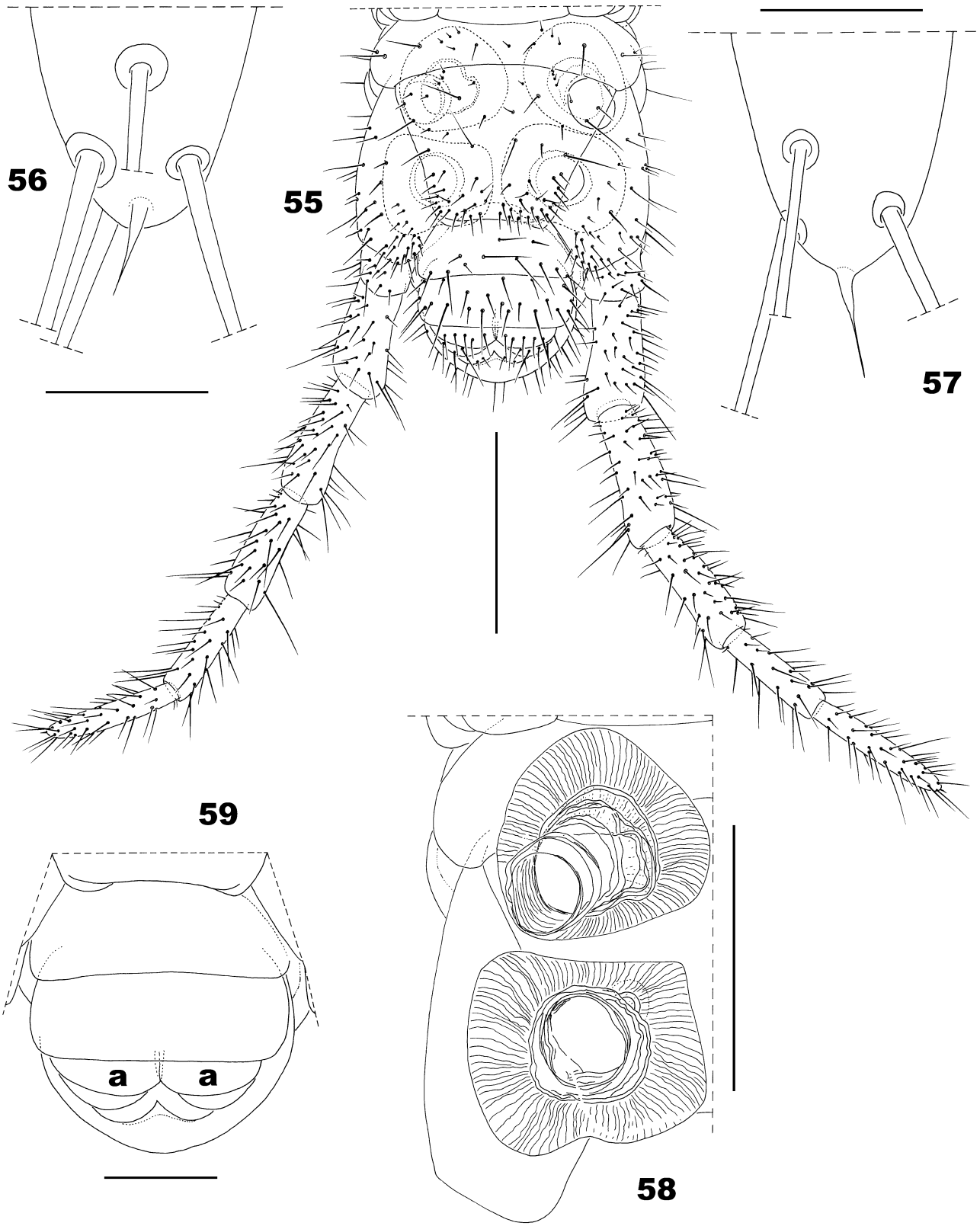
FIGURES 31–39. *Schendylops grismadoi* **sp. nov.** (female holotype; BOLIVIA: Santa Cruz Department: Guarayos Province: 15º 42′ 42′′ S, 62º 46′ 20′′ W): (31) Sternite 9. (32) Sternite 10. (33) Sternite 15. (34) Sternite 16. (35) Sternite 17. (36) Sternite 27. (37) Sternite 34. (38) Sternite 35. (39) Sternite 39. Scale bar: 0.3 mm.



FIGURES 40–47. *Schendylops grismadoi* **sp. nov.** (female holotype; BOLIVIA: Santa Cruz Department: Guarayos Province: 15º 42′ 42′′ S, 62º 46′ 20′′ W): (40) Sternite 40. (41) Sternite 41. (42) Sternite 42. (43) Sternite 43. (44) Sternite 44. (45) Anterior and posterior spermathecae at level of leg-bearing segments 41–43, dorsal (a: spermatozoa, b: contour of spermatheca). (46) Left leg (pair 3), antero-ventral view. (47) Left leg (pair 5), ventral. Scale bars: 0.3 mm (40–44, 46, 47); 0.4 mm (45).



FIGURES 48–54. *Schendylops grismadoi* **sp. nov.** (female holotype; BOLIVIA: Santa Cruz Department: Guarayos Province: 15º 42´ 42´´ S, 62º 46´ 20´´ W): (48) Left leg (pair 9), ventral. (49) Left leg (pair 26), ventral. (50) Left leg (pair 35), ventral. (51) Left leg (pair 44), ventral. (52) Claw of left leg (pair 3), antero-ventral view. (53) Claw of left leg (pair 27), antero-ventral view. (54) Ultimate leg-bearing segment and postpedal segments, dorsal. Scale bars: 0.05 mm (52, 53); 0.3 mm (48–51, 54).



FIGURES 55–59. *Schendylops grismadoi* **sp. nov.** (female holotype; BOLIVIA: Santa Cruz Department: Guarayos Province: 15º 42′ 42′′ S, 62º 46′ 20′′ W): (55) Ultimate leg-bearing segment and postpedal segments, ventral. (56) Detail of distal end of last podomere of right ultimate leg, ventral. (57) Detail of distal end of last podomere of left ultimate leg, ventral. (58) Right coxal organs, ventral. (59) Postpedal segments, ventral (a: gonopods). Scale bars: 0.02 mm (56, 57); 0.1 mm (59); 0.2 mm (58); 0.3 mm (55).

TABLE 3. Differential characters of *Schendylops grismadoi* **sp. nov.**, *S. iguapensis* (Verhoeff, 1938) and *S. marchantariae* (Pereira, Minelli & Barbieri, 1995).

	S. grismadoi **sp. nov.**	*S. iguapensis*	*S. marchantariae*
Number of leg-bearing segments	♀: 45 ♂: ?	♀: 49 ♂: ?	♀: 47, 49, 51, 53 or 55 ♂: 45, 47, (probably 49, 51), 53 or 55
Body length	♀: 27 mm ♂: ?	♀: 27 mm ♂: ?	♀: 42 mm ♂: 32 mm
Anterior margin of cephalic plate conspicuously notched in the middle	yes (Fig. 10)	no	no
Ratio of length of antennae to length of cephalic plate	*ca.* 3.1: 1 (♀)	*ca.* 3.2: 1 (♀)	*ca.* 4.2: 1 (♀ and ♂)
Proximal a.a. with few setae of different lengths	♀:I–IV (Fig. 1) ♂: ?	♀: I ♂: ?	♀, ♂: I–IV
Female antennae: a.a. I about as long as wide	yes	no, wider than long	no, wider than long
Number of claviform sensory sensilla on external (e) and internal (i) edge of a.a. XIV	e: *ca.* 16 i: *ca.* 6	e: *ca.* 9 i: *ca.* 5	e: *ca.* 20–35 i: *ca.* 11–15
Specialized sensilla on a.a. II, V, IX, and XIII placed on hyaline, unreticulated, unpigmented surface	yes	no, surface like the remaining a.a.	yes (Fig. 85)
Number of clypean median setae	*ca*. 9+8	*ca*. 5+5	*ca*. 11+11
Number of blocks of dentate lamellae of mandibles	two	three	four to six
Basal internal edge of forcipular tarsungulum with a small pigmented tooth	yes(Figs.21–23)	no	no
Posterior limit of ventral pore-field series	on penultimate sternite	on antepenultimate sternite	on antepenultimate sternite
Shape of undivided sternal pore-fields of anterior region of the body	as in Figs. 25, 30, 32, 33 (sternites 2, 8, 10, 15 respectively)	as in Figs. 71, 72 (sternites 8, 19 respectively)	as in Figs. 86, 87, 88, 89 (sternites 2, 8, 12, 19 respectively)
Presence of additional pores well separated from the sides of the sternal pore-field areas	on sternites 1, 3–9, Figs. 27, 28, 29, 30 (sternites 4, 5, 7, 8 respectively)	on sternites 2–19, Figs. 71, 72 (sternites 8, 19 respectively)	on sternites 1–3, Fig. 86 (sternite 2)
Position of additional pores accompanying the sternal pore-field areas	anterolateral on sternite 1 (Fig. 24); midlateral on remaining sternites, Figs. 27, 28, 29, 30 (sternites 4, 5, 7, 8 respectively)	anterolateral, Figs. 71, 72 (sternites 8, 19 respectively)	anterolateral, Fig. 86 (sternite 2)
Ratio of width/length of tergite of female ultimate leg-bearing segment	*ca.* 1.30: 1	*ca.* 2.0: 1	*ca.* 1.2: 1
Shape of coxal organs	as in Fig. 58	as in Fig. 73	as in Figs. 90, 91
Ratio of width of tarsus 1 to width of tarsus 2 of female ultimate leg-bearing segment	*ca.* 1.25: 1	*ca*. 1.75: 1	*ca*. 1.4: 1

Legs (pair 1 to penultimate). Chaetotaxy similar throughout the entire body length. Distribution, number and relative size of setae as in Figs. 46–51. Claws ventrobasally with three thin and pale accessory spines (one anterior and two posterior), shape and relative size as in Figs. 52, 53.

Ultimate leg-bearing segment. Intercalary pleurites present at both sides of the ultimate pretergite (Fig. 54). Ultimate presternite not divided along the sagittal plane; width/length ratio of the tergite *ca*. 1.30: 1; width/length ratio of the sternite *ca.* 1.40: 1. Shape and chaetotaxy of tergite and sternite as in Figs. 54, 55. Coxopleura slightly protruding at their distal ventral ends, chaetotaxy represented by small and moderately numerous setae on the distal-internal ventral area, the remaining surface with few large and small setae (Figs. 54, 55). Two single ("homogeneous") coxal organs in each coxopleuron, both organs unilobed (Figs. 58). Relative size of coxal organs in respect to the size of coxopleura and sternite as in Fig. 55. Coxal organs open on the membrane between coxopleuron and sternite partially or totally covered by the latter (Fig. 55). Ultimate legs composed of seven articles. Ratio of width of tarsus 1/width of tarsus 2, *ca.* 1.25: 1; ratio of length of tarsus 2/length of tarsus 1, *ca.* 1.34: 1. Ratio of length of telopodites of ultimate legs/length of sternite *ca.* 4.0: 1. Shape and chaetotaxy of articles of ultimate legs as in Figs. 54, 55. Ultimate pretarsus represented by a pale, rudimentary terminal tubercle with one diminutive apical spine (Figs. 56, 57).

Postpedal segments. Intermediate tergite with posterior margin strongly convex (shape and chaetotaxy as in Fig. 54), intermediate sternite with posterior margin slightly concave; first genital sternite nearly straight (shape and chaetotaxy as in Fig. 55). Gonopods uniarticulate, well separated on the sagittal plane bearing 5+5 setae (Fig. 55, 59: a).

Male. Unknown.

Remarks. The adult (and mated) condition of the female holotype is indicated by the presence of spermatozoa in both spermathecae (located at level of leg-bearing segments 41–43, Fig. 45).

Etymology. The species is respectfully dedicated to one of the collectors of the type specimen described herein, the distinguished arachnologist Cristian José Grismado of the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (CONICET), Buenos Aires, Argentina.

Ecology. The holotype specimen was collected in leaf litter in a subhumid tropical forest environment, in a selective logging area ("La Chonta" forestry concession), at about 300 m a.s.l., east-central Bolivia (Amazon basin). (For climatic features and other traits of the forest at La Chonta, see introduction above).

Type locality. BOLIVIA: Santa Cruz Department: Guarayos Province: 15º 42′ 43′′ S, 62º 46′20′′ W.

Known range. Only known from the type locality.

Neotropical members of *Schendylops* morphologically similar to *S. grismadoi* sp. nov. In the differential diagnosis above, the new species has been compared in detail with the other Neotropical species characterized by having an uninterrupted series of ventral pore-fields, extending from first to penultimate sternite (undivided on anterior and posterior sternites, divided in two subsymmetrical areas on the intermediate). The Neotropical members with pore-field series, ending instead on the antepenultimate sternite (but sharing all remaining mentioned traits) are *S. amazonicus* (Pereira, Minelli & Barbieri, 1994), *S. borellii* (Silvestri, 1895), *S. iguapensis* (Verhoeff, 1938), *S. longitarsis* (Silvestri, 1895), *S. marchantariae* (Pereira, Minelli & Barbieri, 1995), and *S. mesopotamicus* (Pereira, 1981). *S. grismadoi* can be differentiated from the latter by means of the following unique features: anterior margin of cephalic plate conspicuously notched in the middle (Fig. 10); basal internal edge of forcipular tarsungulum with a small pigmented tooth (Figs. 21–23). Among the aforementioned taxa those having a number of leg-bearing segments roughly similar to *S. grismadoi* are *S. iguapensis* and *S. marchantariae*; the selected morphological traits included in Table 3 differentiate the new species from the latter two.

Key to the Neotropical species of *Schendylops* with sternal pore-fields all along the trunk
(including those having an interrupted series on some mid-body sternites).

1. With pore-fields on sternites of anterior and posterior regions of the body, but totally absent on some intermediate sternites 2
- With pore-fields in an uninterrupted series all along the body 6
2. All pore-fields undivided 3
- Some pore-fields divided in two subsymmetrical areas 5
3. 65 leg-bearing segments (female); body length 29 mm (female); proximal margin of some anterior sternites provided medially with a small shallow pit, accompanied by an internal chitinous thickening . . . . . ***S. demangei*** (Pereira, 1981)
- 43 or 53 leg-bearing segments; body length 11–18 mm; proximal margin of anterior sternites without a shallow pit 4
4. 53 leg-bearing segments (female); body length 11 mm (female); a.a. without type *c* sensilla; dentate lamellae of mandibles divided in two blocks; coxosternite of first maxillae without setae; coxosternal lappets of first maxillae small, not attaining the

anterior margin of the first article of the telopodite; calyx of poison gland palmate in shape; claws of walking legs conspicuously curved internally; posterior limit of sternal pore-field series on penultimate sternite; pore-fields not accompanied by additional pores at their sides; pretergite of ultimate leg-bearing segment with intercalary pleurites . . . . . ***S. minutus*** (Pereira & Minelli, 1993)

- 43 leg-bearing segments (male); body length 18 mm (male); some a.a. with type *c* sensilla; dentate lamellae of mandibles divided in three blocks; coxosternite of first maxillae with 2+2 setae; coxosternal lappets of first maxillae relatively large, attaining the anterior margin of the first article of the telopodite; calyx of poison gland cylindrical in shape; claws of walking legs not conspicuously curved internally; posterior limit of sternal pore-field series on antepenultimate sternite; pore-fields accompanied by additional antero-lateral pores; pretergite of ultimate leg-bearing segment without intercalary pleurites . . . . . ***S. placcii*** (Pereira & Minelli, 1996)

5. Male with 43 leg-bearing segments, female with 47; body length 22 mm (male), 27 mm (female); clypeus with *ca.* 22 median setae; posterior limit of sternal pore-field series on penultimate sternite; pretergite of ultimate leg-bearing segment without intercalary pleurites . . . . . ***S. achalensis*** Pereira, 2008
- Male with 41 leg-bearing segments; body length 18 mm (male); clypeus with *ca.* 12 median setae; posterior limit of pore-field series on antepenultimate sternite; pretergite of ultimate leg-bearing segment with intercalary pleurites . . . . . ***S. demartini*** (Pereira & Minelli, 1996)

6. Sternite 1 with pore-field. 7
- Sternite 1 without pore-field 19

7. All sternal pore-fields undivided. . . . . ***S. labbanus*** (Chamberlin, 1921)
- Some sternal pore-fields divided in two subsymmetrical areas 8

8. Posterior limit of sternal pore-field series on antepenultimate sternite. 9
- Posterior limit of sternal pore-field series on penultimate sternite 14

9. Side-pieces of labrum with *ca*. 25+25 teeth; dentate lamellae of mandibles with *ca.* 16–23 teeth; clypeus with *ca*. 34 median setae . . . . . ***S. longitarsis*** (Silvestri, 1895)
- Side-pieces of labrum with *ca.* 5-11+5-11 teeth; dentate lamellae of mandibles with *ca.* 5–15 teeth; clypeus with 10–26 median setae. 10

10. With 45 to 55 leg-bearing segments 11
- With 57–63 leg-bearing segments. 12

11. Antennae *ca.* 3.2 times as long as cephalic plate; antennae showing few setae of different lengths on a.a. I; specialized sensilla on a.a. II, V, IX and XIII placed on areas reticulated as the remaining a.a. surfaces; a.a. XIV with *ca.* 9 claviform sensilla on the external edge and *ca.* 5 on the internal edge; additional antero-lateral pores accompanying sternal pore-fields on sternites 2–19; width/length ratio of tergite of female ultimate leg-bearing segment *ca.* 2.0: 1; 49 leg-bearing segments (female) . . . . . ***S. iguapensis*** (Verhoeff, 1938)
- Antennae *ca.* 4.2 times as long as the cephalic plate; antennae showing few setae of different lengths on a.a. I–IV; specialized sensilla on a.a. II, V, IX and XIII placed on hyaline, unreticulated, unpigmented areas (Fig. 85); a.a. XIV with *ca.* 20–35 claviform sensilla on the external edge and *ca.* 11–15 on the internal edge; additional antero-lateral pores accompanying sternal pore-fields on sternites 1–3; width/length ratio of tergite of female ultimate leg-bearing segment *ca.* 1.3: 1; 47, 49, 51, 53 or 55 leg-bearing segments (female), 45, 47, (probably 49, 51), 53 or 55 (male) . . . . . ***S. marchantariae*** (Pereira, Minelli & Barbieri, 1995)

12. Tarsus 2 of male ultimate legs spindle-shaped . . . . . ***S. mesopotamicus*** (Pereira, 1981)
- Tarsus 2 of male ultimate legs not spindly-shaped 13

13. Male with 61 leg-bearing segments, female with 63; mid-piece of labrum with *ca.* 20 teeth; forcipular trochanteroprefemur with a small unpigmented tubercle on the apical medial edge; male ultimate legs *ca.* 5.3 times as long as the sternite of the ultimate leg-bearing segment; large setae on podomeres of male ultimate legs clearly differentiated in length from the remaining smaller setae . . . . . ***S. amazonicus*** (Pereira, Minelli & Barbieri, 1994)
- Male with 57 leg-bearing segments; mid-piece of labrum with *ca.* 12 teeth; forcipular trochanteroprefemur unarmed on medial edge; male ultimate legs *ca.* 4.6 times as long as the sternite of the ultimate leg-bearing segment; large setae on podomeres of male ultimate legs poorly differentiated in length from the remaining smaller setae. . . . . ***S. borellii*** (Silvestri, 1895)

14. Ultimate leg-bearing segment without intercalary pleurites at the sides of the ultimate pretergite (Fig. 94). . . . . ***S. parahybae*** (Chamberlin, 1914)
- Ultimate leg-bearing segment with intercalary pleurites at the sides of the ultimate pretergite 15

15. 69 leg-bearing segments (male and female); body length 70 mm (female); body width 2 mm (female); coxosternite of first maxillae with *ca*. 14+11 setae (Fig. 67); coxosternite of second maxillae with *ca.* 26+34 setae (Fig. 67) . . . . . ***S. demelloi*** (Verhoeff, 1938)
- 45–55 leg-bearing segments; body length 16–36 mm; coxosternite of first maxillae with 2+2 setae; coxosternite of second maxillae with *ca.* 9-17+9-17 setae 16

16. Body length 16 mm (female); coxosternite of first maxillae with a wide median longitudinal sulcus not reaching the anterior and posterior margins; dorsal and ventral edges of apical claws of the telopodites of second maxillae with *ca.* 7–10 teeth; 47 leg-bearing segments. . . . . ***S. tropicus*** (Brölemann & Ribaut, 1911)
- Body length 27–36 mm; coxosternite of first maxillae without a median longitudinal sulcus; dorsal and ventral edges of apical claws of the telopodites of second maxillae with *ca.* 14–26 teeth; 45, 49–55 leg-bearing segments. 17

17. 45 leg-bearing segments (female); anterior margin of cephalic plate conspicuously notched in the middle (Fig. 10); dentate lamellae of mandibles divided in two blocks (Figs. 13–15); basal internal edge of forcipular tarsungulum with a small pigmented tooth (Figs. 21–23); width/length ratio of sternite of female ultimate leg-bearing segment *ca.* 1.40: 1 . . . . . .

. . . . . ***S. grismadoi* sp. nov.**

- 49–55 leg-bearing segments; anterior margin of cephalic plate not notched in the middle; dentate lamellae of mandibles divided in three blocks; basal internal edge of forcipular tarsungulum unarmed; width/length ratio of sternite of female ultimate leg-bearing segment *ca.* 1.23–1.27: 1. 18

18. Female with 51 leg-bearing segments, male with 49; antennae sexually dimorphic; clypeus with *ca*. 17+17 median setae; dorsal and ventral edges of apical claws of telopodites of second maxillae with *ca.* 24–26 teeth; sternal glands pale yellow in colour; additional pores accompanying sternal pore-fields placed in antero-lateral position (Figs. 62–64); posterior coxal organs externally bilobed (Fig. 66); ratio of width of tarsus 1/width of tarsus 2 of female ultimate legs *ca.* 2.0: 1 . . . . . ***S. coscaroni*** (Pereira & Minelli, 1996)
- Female with 53 or 55 leg-bearing segments, male with 51 or 53; antennae not sexually dimorphic; clypeus with *ca*. 10+10 median setae; dorsal and ventral edges of apical claws of telopodites of second maxillae with *ca.* 17 teeth; sternal glands purple in colour; additional pores accompanying sternal pore-fields mostly placed in mid-lateral position (Fig. 80) (antero-lateral on sternite 1); posterior coxal organs externally unilobed (Fig. 84); ratio of width of tarsus 1/width of tarsus 2 of female ultimate legs *ca.* 1.40: 1. . . . . ***S. inquilinus*** Pereira, Uliana & Minelli, 2007

19. All sternal pore-fields undivided. 20
- Some sternal pore-fields divided in two subsymmetrical areas 24

20. Posterior limit of sternal pore-field series on antepenultimate sternite. 21
- Posterior limit of sternal pore-field series on penultimate sternite 23

21. Tarsus 2 of ultimate legs much shorter than tarsus 1 . . . . . ***S. varipictus*** (Chamberlin, 1950)
- Tarsus 2 of ultimate legs similar in length to tarsus 1. 22

22. Anterior and posterior coxal organs unilobed; body length 12.5 mm . . . . . ***S. lesnei*** (Brölemann & Ribaut, 1911)
- Anterior and posterior coxal organs bilobed; body length 24 mm . . . . . ***S. bakeri*** (Chamberlin, 1914)

23. 43, 45 leg-bearing segments (female); body length 18 mm (female); length of specialized sensilla on apex of a.a. XIV conspicuously longer than the claviform sensilla; lappets of coxosternite of first maxillae very small; sternal pore-fields without additional pores at their sides; pretergite of ultimate leg-bearing segment with intercalary pleurites; posterior coxal organs discreetly bilobed externally . . . . . ***S. continuus*** (Pereira, Minelli & Barbieri, 1995)
- 59 leg-bearing segments (male); body length 32 mm (male); length of specialized sensilla on apex of a.a. XIV distinctly shorter than the claviform sensilla; lappets of coxosternite of first maxillae well developed; some sternal pore-fields of anterior region of the body accompanied by a few additional pores at their sides; pretergite of ultimate leg-bearing segment without intercalary pleurites; posterior coxal organs externally unilobed . . . . . ***S. colombianus*** (Chamberlin, 1921)

24. Posterior limit of sternal pore-field series on sternite prior to antepenultimate 25
- Posterior limit of sternal pore-field series on penultimate or antepenultimate sternite 26

25. 49 leg-bearing segments (male); body length 35 mm (male); antennae *ca.* 3.5 times as long as the cephalic plate; clypeus with *ca*. 19+19 median setae; dentate lamellae of mandibles subdivided into three blocks; apical claws of telopodites of second maxillae with *ca.* 26–27 dorsal teeth and *ca*. 20–21 ventral teeth; forcipular tergite and dorsal surface of forcipular pleurites with very numerous setae; sternal pore-fields of posterior region of the body subdivided in two subsymmetrical areas . . . . . ***S. olivaceus*** (Crabill, 1972)
- 61 leg-bearing segments (female); body length 28 mm (female); antennae *ca.* 2.5 times as long as the cephalic plate; clypeus with *ca*. 8+11 median setae; dentate lamellae of mandibles not subdivided into blocks; apical claws of telopodites of second maxillae with *ca*. 11–13 dorsal teeth and *ca.* 9–10 ventral teeth; forcipular tergite and forcipular pleurites with few setae; sternal pore-fields of posterior region of the body undivided. . . . . ***S. paulista*** (Brölemann, 1905)

26. Posterior limit of sternal pore-field series on penultimate sternite . . . . . ***S. pampeanus*** (Pereira & Coscarón, 1976)
- Posterior limit of sternal pore-field series on antepenultimate sternite 27

27. Clypeus with *ca.* 7 prelabral setae; side-pieces of labrum with *ca.* 40+46 teeth; dentate lamellae of mandibles not subdivided into blocks (with *ca*. 25–30 teeth). . . . . ***S. sublaevis*** (Meinert, 1870)
- Clypeus with 2 prelabral setae; side-pieces of labrum with a maximum of 7+7 teeth; dentate lamellae of mandibles subdivided into two-three blocks (with *ca*. 9–14 teeth) 28

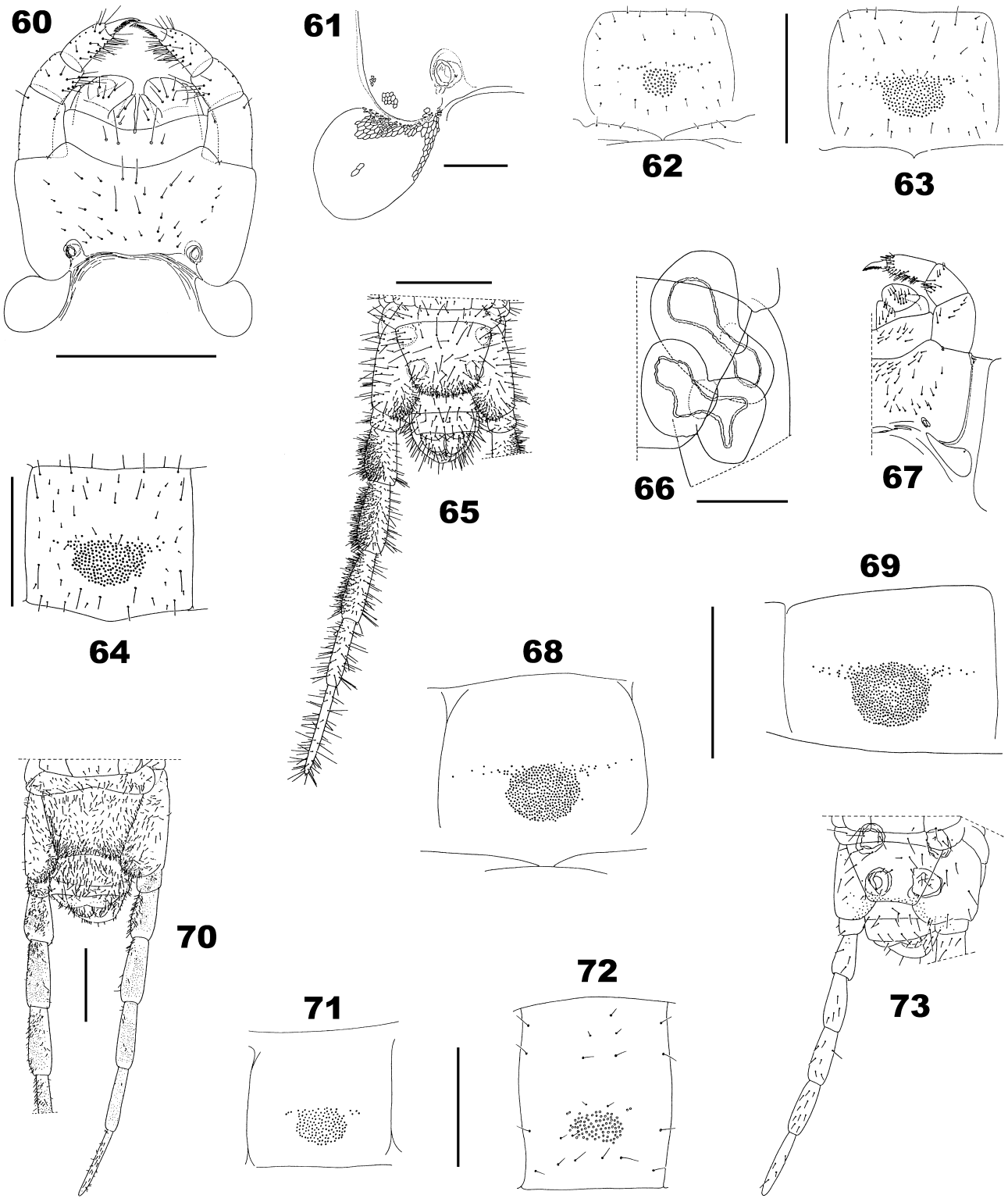
28. 63 or 65 leg-bearing segments (female); body length 70 mm (female); clypeus with *ca*. 40 median setae; mid-piece of labrum with *ca*. 30 teeth . . . . . ***S. gounellei*** (Brölemann, 1902)
- 41–51 leg-bearing segments; body length 15–38 mm; clypeus with *ca*. 16–20 median setae; mid-piece of labrum with *ca.* 11–14 teeth 29

29. 51 leg-bearing segments (female); body length 38 mm (female) . . . . . ***S. verhoeffi*** (Brölemann & Ribaut, 1911)
- 41–49 leg-bearing segments; body length 15–30 mm 30

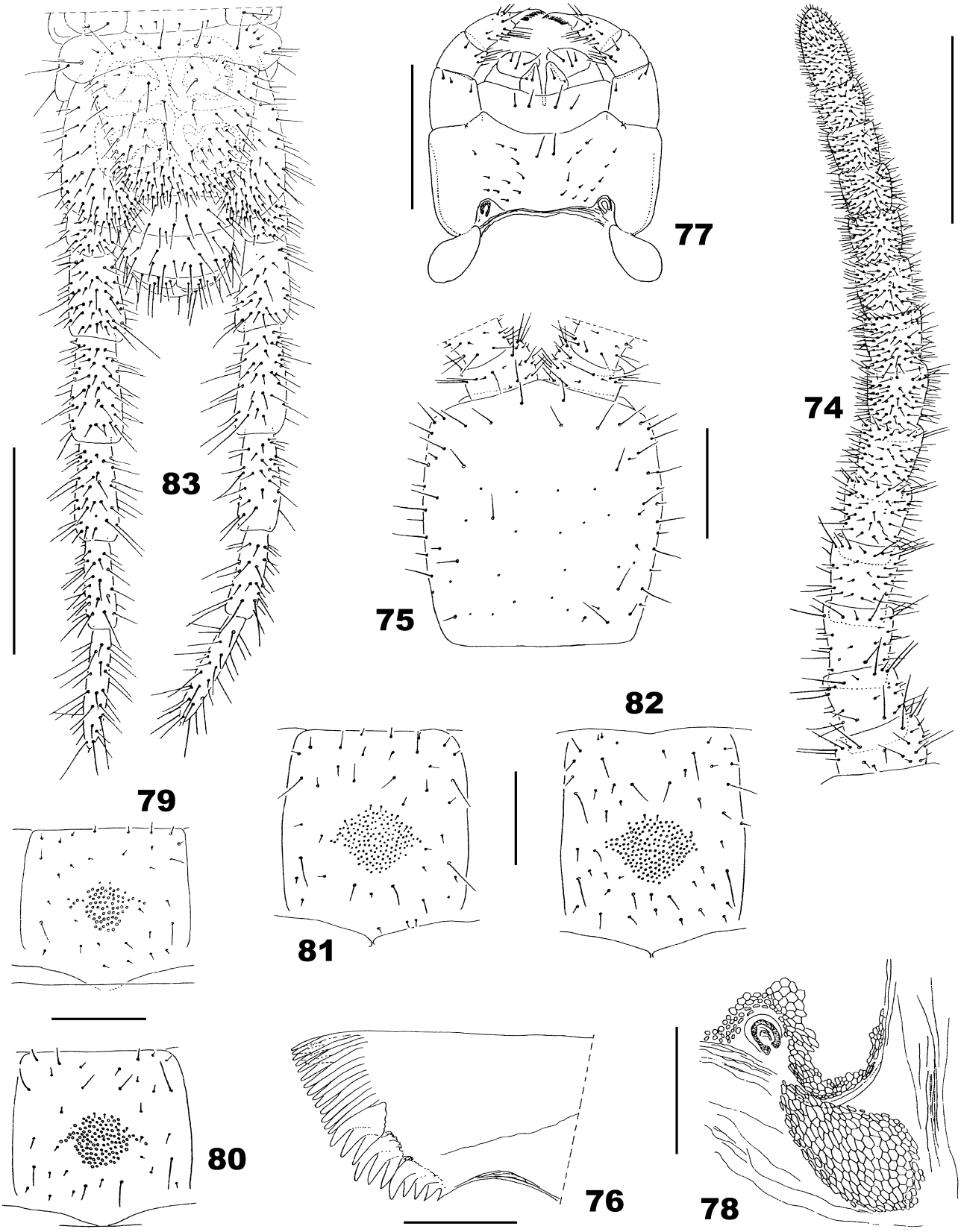
30. 41 leg-bearing segments (male); body length 15 mm (male) . . . . . ***S. paraguayensis*** (Silvestri, 1895)
- 43–49 leg-bearing segments; body length 28–30 mm 31

31. 45–49 leg-bearing segments; coxosternite of second maxillae with *ca*. 30 setae. . . . . ***S. madariagensis*** (Pereira, 1981)
- 43–47 leg-bearing segments; coxosternite of second maxillae with *ca.* 16–21 setae. 32

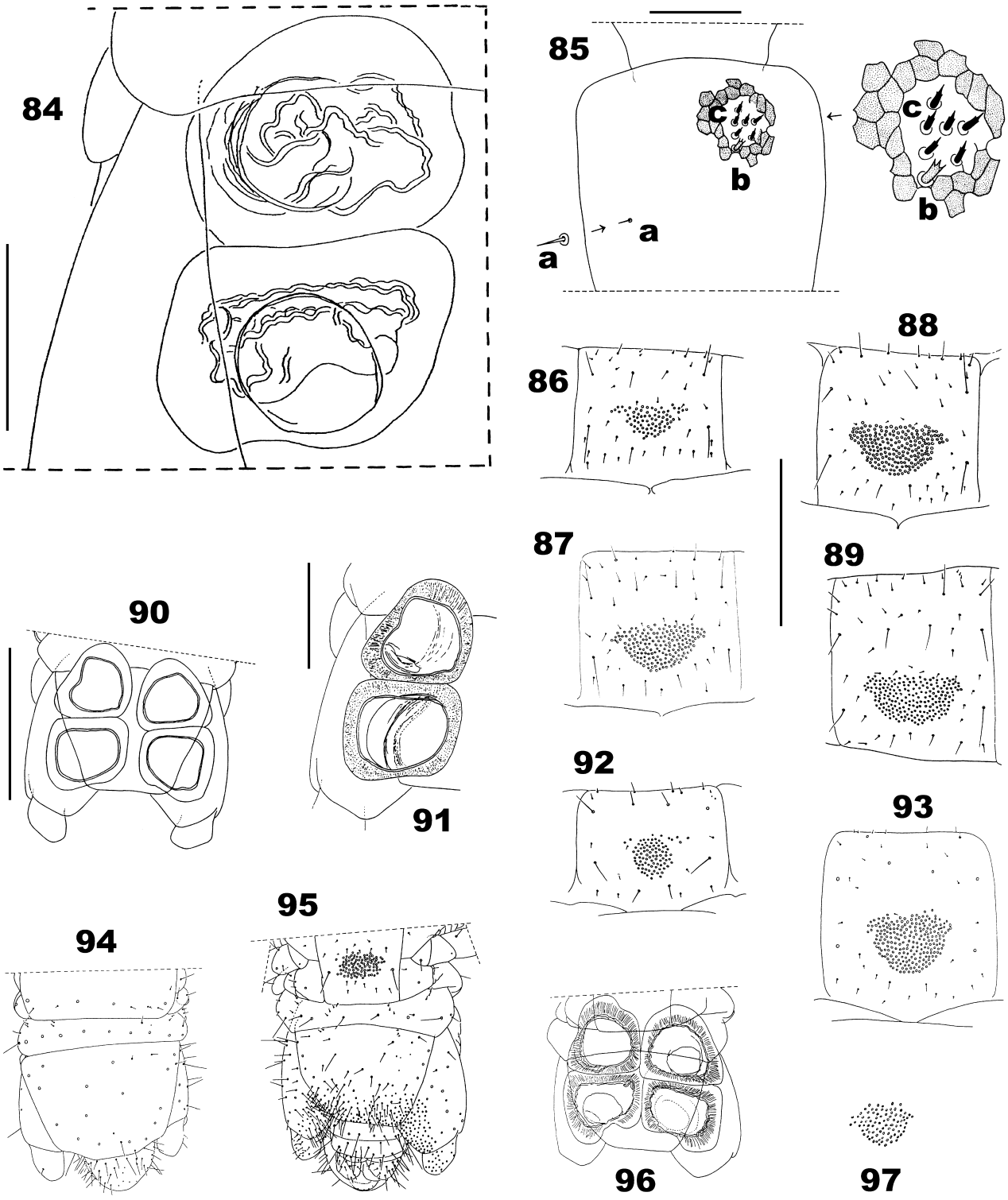
32. Female with 43 leg-bearing segments; antennae with three types of specialized sensilla; undivided sternal pore-fields of anterior region of the body extending up to sternite 25; divided sternal pore-fields occur on eight mid-body sternites . . . . . ***S. fieldi*** (Chamberlin, 1944)
- Female with 45 or 47 leg-bearing segments, male with 43 or 45; antennae with two types of specialized sensilla; undivided sternal pore-fields of anterior region of the body extending up to sternites 18–19; divided sternal pore-fields occur on 21–23 mid-body sternites. . . . . ***S. elegantulus*** (Meinert, 1886)



FIGURES 60–73. (60–66). *Schendylops coscaroni* (Pereira & Minelli, 1996) (female holotype; BRAZIL: São Paulo: Serra do mar): (60) First and second maxillae, ventral. (61) Detail of right postero-external region of second maxillae, ventral. (62) Sternite 2. (63) Sternite 10. (64) Sternite 16. (65) Ultimate leg-bearing segment and postpedal segments, ventral. (66) Left coxal organs, ventral. (67–70). *Schendylops demelloi* (Verhoeff, 1938) (female lectotype; BRAZIL: São Paulo: Iguape): (67) First and second maxillae, ventral. (68) Sternite 6. (69) Sternite 14. (70) Ultimate leg-bearing segment and postpedal segments, ventral. (71–73). *Schendylops iguapensis* (Verhoeff, 1938) (female holotype; BRAZIL: São Paulo: Iguape): (71) Sternite 8. (72) Sternite 19. (73) Ultimate leg-bearing segment and postpedal segments, ventral. (From Pereira & Minelli, 1996). Scale bars: 0.1 mm (61); 0.2 mm (66); 0.4 mm (71, 72); 0.5 mm (60, 62–65); 0.6 mm (70); 0.7 mm (68, 69). No scales available (67, 73).



FIGURES 74–83. *Schendylops inquilinus* Pereira, Uliana & Minelli, 2007 (female holotype; BRAZIL: Mato Grosso, Pirizal, Pantanal de Poconé): (74) Right antenna, ventral. (75) Cephalic plate and bases of antennae. (76) Rigth mandible, dorsal. (77) First and second maxillae, ventral. (78) Detail of left postero-external region of second maxillae, ventral. (79) Sternite 2. (80) Sternite 4. (81) Sternite 10. (82) Sternite 12. (83) Ultimate leg-bearing segment and postpedal segments, ventral. Scale bars: 0.05 mm (76); 0.1 mm (78); 0.2 mm (79–82); 0.3 mm (75, 77); 0.4 mm (74, 83).



FIGURES 84–97. (84). *Schendylops inquilinus* Pereira, Uliana & Minelli, 2007 (female holotype; BRAZIL: Mato Grosso, Pirizal, Pantanal de Poconé): Right coxal organs, ventral. (85–91). *Schendylops marchantariae* (Pereira, Minelli & Barbieri, 1995) (female holotype; BRAZIL: Amazonas: Rio Solimões: Ilha da Marchantaria): (85) Right a.a. XIII, dorsal (a: *a* type sensilla; b, c: *b, c* type sensilla (placed on hyaline, unreticulated, unpigmented surface)). (86) Sternite 2. (87) Sternite 8. (88) Sternite 12. (89) Sternite 19. (90) Coxal organs, ventral. (91) Detail of right coxal organs, ventral. (From Pereira *et al*., 1995). (92–96). *Schendylops parahybae* (Chamberlin, 1914) (female holotype; BRAZIL: Paraíba State: Independencia): (92) Sternite 2. (93) Sternite 14. (94) Ultimate leg-bearing segment and postpedal segments, dorsal. (95) Penultimate and ultimate leg-bearing segments, and postpedal segments, ventral. (96) Coxal organs, ventral. (From Pereira & Minelli, 1996). (97). *Schendylops tropicus* (Brölemann & Ribaut, 1911) (female holotype; French Guiana): Pore-field on sternite 14. (From Brölemann & Ribaut 1912). Scale bars: 0.05 mm (85); 0.1 mm (84); 0.2 mm (91); 0.4 mm (90); 0.5 mm (86–89). No scales available (92–97).

FIGURE 98. Type locality of *Schendylops grismadoi* **sp. nov**., in the Amazon forest of Bolivia.

Remarks on the key. Data of *S. virgingordae* were taken from the lectotype male and paralectotype male (after Pereira, 1985b).

Schendylops bolivianus and *Schendylops brasilianus*, which according to the original descriptions have ventral pores all along the body (see Silvestri 1897), are not included in this key due to insufficient knowledge of morphological features of specific value. (Both nominal species are currently regarded as *Species inquirenda*, Pereira 1983, 1985a; Pereira & Minelli 1996; Minelli 2006).

Discussion

The Neotropical species of *Schendylops* with sternal pore-fields present on the anterior region of the body only are *S. anamariae* (Pereira, 1981) (from Argentina); *S. andesicola* (Chamberlin, 1957) (from Ecuador); *S. dentifer* (Chamberlin, 1957) (from Ecuador); *S. edentatus* (Kraus, 1957) (from Peru); *S. interfluvius* (Pereira, 1984) (from Argentina); *S. janauarius* (Pereira, Minelli & Barbieri, 1995) (from Brazil); *S. jeekeli* Pereira, 2009 (from Brazil); *S. lomanus* (Chamberlin, 1957) (from Peru); *S. luederwaldi* (Brölemann & Ribaut, 1911) (from Brazil); *S. nealotus* (Chamberlin, 1950) (from Galápagos Is. (Ecuador)); *S. oligopus* (Pereira, Minelli & Barbieri, 1995) (from Brazil); *S. pallidus* (Kraus, 1955) (from Peru); *S. paolettii* (Pereira & Minelli, 1993) (from Venezuela); *S. perditus* (Chamberlin, 1914) (from Brazil); *S. peruanus* (Turk, 1955) (from Peru); *S. potosius* (Chamberlin, 1955) (from Bolivia); *S. ramirezi* Pereira, 2013 (from Brazil); *S. schubarti* Pereira, Foddai & Minelli, 2002 (from Brazil); *S. titicacaensis* (Kraus, 1954) (from Peru); *S. virgingordae* (Crabill, 1960) (from Venezuela, British Virgin Is.: Virgin Gorda, and French Antilles: Martinique). An additional species, *S. gracilis* (Attems, 1934) (from Suriname), has pore-fields on the anterior sternites, and also on proximal sternites of the posterior body region.

An identification key to the aforementioned taxa, except *S. ramirezi*, can be found in Pereira (2009); the latter may be incorporated in couplet "10" of that key, grouping it with *S. oligopus* from which it can be differentiated as explained in Pereira (2013).

Only four species of Geophilomorpha are currently reported from Bolivia, *i.e., Schendylops bolivianus* (Silvestri, 1897) and *Schendylops potosius* (Chamberlin, 1955) in the family Schendylidae; *Ribautia roigi* Pereira, 2008 in Geophilidae; and *Arcophilus gracillimus* (Verhoeff, 1938) in Himantariidae (whose identity is uncertain and its familial assignment dubious [Foddai *et al.* 2000, Minelli 2006, Pereira 2008]). *Schendylops grismadoi* **sp. n.**

is the fifth species of the order to be recorded from this country. Considering that Bolivia represents an extensive geographic area with a great variety of environments located at elevations ranging from a few hundred meters above sea level in the Amazon basin to high altitudes in the Andes, the foregoing taxa likely represent only a small portion of the chilopod biodiversity in this vast and diverse territory, which still remains almost unexplored in respect to its centipede fauna.

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