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Neotropical *Allocladius* Kieffer, 1913 and *Pseudosmittia* Edwards, 1932 (Diptera: Chironomidae)

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Abstract

The Neotropical species of the genera *Pseudosmittia* Edwards, 1932 and *Allocladius* Kieffer, 1913 are described or redescribed, short generic diagnoses are given, and keys to the males presented. The following new species are described and figured as male imagines: *Allocladius globosus*, *A. quadrus*, *A. scrotus*, *Pseudosmittia adunca*, *P. amorimi*, *P. cambuciensis*, *P. carioca*, *P. catarinense*, *P. gibbistyla*, *P. invirgata*, *P. lamasi*, *P. lamellata*, *P. magdae*, *P. nana*, *P. palpina*, *P. paulista*, *P. pinhoi*, *P. roquei*, *P. tropis*, *P. umbonata*, and *P. uncata*. *Allocladius bilobulatus* (Edwards) **comb. n.**, *A. fortispinatus* (Edwards) **comb. n.**, *A. neobilobulatus* (Paggi) **comb. n.**, *Pseudosmittia joaquimvenancioi* (Messias *et*

Oliveira), and *P. windwardensis* (Sæther) are redescribed as male imagines. Diagnoses of *Pseudosmittia brachydicerca* (Edwards), *P. digitata* Sæther, and *P. forcipata* (Goetghebuer) are given. The female of *A. bilobulatus*, the pupa of *A. neobilobulatus*, a pupa from Chile possibly belonging to *A. bilobulatus*, a pupa of the *Pseudosmittia forcipata* group from Brazil, and an unplaced larva from the Falkland Islands are also described.

Key words: Chironomidae, Orthoclaadiinae, *Allocladius*, *Pseudosmittia*, new species, new combinations, keys, Neotropical

Introduction

Aquatic species of non-biting midges (Chironomidae) are among the most important members of freshwater invertebrates. They occupy a key position in aquatic systems from an ecological perspective and are very valuable indicators in biogeographical, fauna-historical, and phylogenetic patterns. Much less emphasis has, however, been placed on rearing, associating, and describing semiaquatic and semiterrestrial species as well as species from temporary freshwater habitats and marine intertidal zones. Consequently, the biodiversity of such midges is much less well known. These groups, however, are very important, phylogenetically as well as biogeographically, since they show adaptations found both among the more primitive and among the most derived groups of Chironomidae. Our investigations in the tropics indicate that these groups may be dominating in some tropical areas. Most of the semiaquatic species of midges are to be found within the subfamily Orthoclaadiinae where one of the larger genera remaining to be revised is the genus *Pseudosmittia* Edwards. However, Ferrington and Sæther (in manuscript) show that the genus should be divided into three genera. The genera are particularly interesting since they contain species that range from purely limnic species to species that are terrestrial, semiaquatic and even intertidal marine as larvae and pupae. Two of the genera occur in the Neotropical region, *Pseudosmittia* Edwards with the type species *Spaniotoma (Smittia) angusta* Edwards and *Allocladius* Kieffer with the type species *Allocladius niger* Kieffer, and are worldwide in distribution. The third, as yet unnamed genus, primarily is Holarctic and Afrotropical.

In this paper we are treating the 29 known Neotropical species, 21 of which are new to science. In addition two pupal and one larval morphotypes are described. Ferrington and Sæther (in manuscript) will be dealing with the phylogeny of the genus as a whole. Preliminary results indicate that the apparent many transitions from a limnic to a terrestrial or marine way of life all are steps of the same trend, from limnic to disposed for marine / terrestrial life to terrestrial or marine.

Material and methods

Morphological nomenclature follows Sæther (1980) with the modifications and additions given in Sæther (1989, 1990). The measurements are given as ranges followed by a mean when four or more measurements are made, followed by the number measured in parentheses (n).

Several species have an extra vein in that the postcubitus has preapical furcation. A ratio VR_2 , which is the distance from arculus to the postcubital fork divided by the length of M, is given. On the wing there often is a false vein continuing from the lower margin of R_{4+5} or of the costal extension slightly below the wing margin and sometimes reaching to the wing apex (e.g. Freeman 1956 fig. 13h). This false vein often has been mistaken for the costal extension.

The abbreviations for the collections where the material are kept are listed below:

BMNH: The Natural History Museum [British museum (Natural History)], London, England.

CU: Cornell University, Division of Biological Sciences, Ithaca, New York, USA.

ILLP: Instituto de Limnología de La Plata, La Plata, Argentina.

IOC: Instituto Oswaldo Cruz, Rio de Janeiro, Brazil.

IRSN: Institute Royal de Sciences Naturelles de Belgique, Bruxelles, Belgium.

MZUSP: Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil.

USNM: US National Museum, Washington, DC, USA.

ZMBN: Department of Natural History, Bergen Museum, University of Bergen, Norway.

ZSM: Zoologische Staatssammlung München, Munich, Germany.

***Allocladius* Kieffer**

Allocladius Kieffer, 1913: 28.

Allocladius Kieffer; Freeman and Cranston (1980: 181); Ashe (1983: 10); Ferrington and Sæther (in manuscript).

Lindebergia Tuiskunen, 1984: 121.

Prosmittia Brundin, 1956: 165 *sensu* Cranston and Oliver, 1988: 449, pro parte, misidentification; Oliver (1963: 177); Sæther *et al.* (1984: 270). See Sæther and Ferrington (1993).

Pseudosmittia auct. nec Edwards.

Type species. *Allocladius niger* Kieffer, 1913.

Diagnostic characters. The imagines are separable from other Orthoclaadiinae with bare eyes, wings, and squama, by having 4–16 short non-scalpellate acrostichals in mid-scutum without additional tubercle, hump or microtrichial tuft; non-extended, non-protruding eyes; anteprenotal lobes not reduced medially; supraalars usually present; anal lobe of wing mostly well developed, costa not extended to moderately long, VR high, Cu₁ sinuate to slightly curved. Male anal point usually placed forward on tergite IX on microtrichiose and setose base, apical part short to long, parallel-sided to slightly tapering, free of microtrichia at least at apex; single, plate- to spine-like, median virga; pars ventralis often present; superior volsella absent or more often present and bulge-like; male gonostylus simple. Female genitalia with gonocoxite IX long and low with characteristic sclerotized margin against tergite IX, tergite IX divided, small dorsomedian lobe, large ventrolateral lobe, and spermathecal duct with loop.

The pupae can be separated from other orthoclaids by lacking a thoracic horn, having short frontal setae on frontal apotome, reduced or smoothly rounded anal lobe with fine hair-like anal macrosetae; three precorneals and two median anteprenotals all fine and hair-like; conjunctives both dorsally and ventrally armed with similar sized spinules. Tergites II–VII with anterior and posterior spinules clearly larger than median spinules, resulting in a transversely striped appearance.

The larvae are separable from all other orthoclaids except *Camptocladus* van der Wulp, 1874, *Pseudosmittia* Edwards, and the new genus (Ferrington & Sæther in manuscript) by having broad, bifid S I and S II, reduced antenna, and no procerci. They differ from *Camptocladus* by having posterior parapods with claws and premandible with brush. From *Pseudosmittia* they differ by having posterior parapods with 7–11 claws, mandible with 4 inner teeth, and antennal blade extending beyond flagellum about as long as width of basal segment. From the new genus they differ by having mandible with 4 inner teeth combined with about 40 longer claws on anterior parapods. They have a mentum with 4–5 pairs of lateral teeth, at most 1 anal seta, and posterior parapods longer than anal tubules.

A more complete diagnosis and description will be given by Ferrington and Sæther (in manuscript). The genus can be divided in a basal paraphyletic *fortispinatus* group and a monophyletic collection of four groups of which the *longicrus* group includes all the Neotropical species except for *A. fortispinatus*. A subgroup, the *bilobulatus* group contains all species with a pars ventralis.

Key to the males of Neotropical *Allocladius* Kieffer

1. Pars ventralis and supraalar absent; costal extension long (about 90 µm) (Figs 17–19).....
.....*A. fortispinatus* (Edwards) comb. n.
- With single or double pars ventralis; supraalar usually present; costal extension short, but false vein or dark shadow parallel to costa may give the impression of a long extension..... 2
2. With two large pars ventralis reaching to 0.50–0.76 gonocoxite length (Figs 32–33)
.....*A. neobilobulatus* (Paggi) comb. n.

- With single, small to large pars ventralis at most reaching to 0.45 gonocoxite length..... 3
- 3. Pars ventralis small (18–36 μm long) digitiform; posterior lobe of inferior volsella well developed, reaching much further posterior than inferior volsella (Figs 5–7)..... *A. bilobulatus* (Edwards) comb. n.
- Pars ventralis longer (45–90 μm long) digitiform, rounded or square; posterior lobe of inferior volsella absent to well developed, when well developed not reaching much further posterior than inferior volsella..... 4
- 4. Pars ventralis much longer than broad, digitiform (Figs 50–51)..... *A. scrotus* sp. n.
- Pars ventralis as wide as or wider than long, circular to square 5
- 5. Pars ventralis spheroid, about as wide as long (Figs 25–26)..... *A. globosus* sp. n.
- Pars ventralis square, wider than long (Figs 43–44)..... *A. quadrus* sp. n.

***Allocladius bilobulatus* (Edwards) comb. n.**
(Figs 1–16)

Smittia (*Smittia*) *bilobulata* Edwards, 1931: 299.

Pseudosmittia bilobulata (Edwards); Paggi (1993: 172), Pinho *et al.* (2009: 164).

Material examined. ARGENTINA: Territorio Río Negro, Viedma, male holotype, 23.x.1926, F.W. & M. Edwards (BM 1927–63, BMNH). CHILE: Región Metropolitana, San José de Maipo, Puente Río Yeso, 33°47.127'S, 70°13.625'W, 1.842 m a.s.l., 2 males, 25.i.1996, hand net, T. Andersen; as previous except 8 males, 16.ii.1999; San José de Maipo, Río Yeso, 8 km East of Romeral, 1 male, 31.i.2009, hand net, T. Andersen; Santiago, Calera de Tango, El Copihue, 520 m a.s.l., 6 males, 01.ii.2009, hand net, T. Andersen (ZMBN). PERU: Cusco Region, Urubamba Province, Aguas Calientes, 1.900 m a.s.l., 19 males, 1 female, 22.i.2009, hand net, T. Andersen (ZMBN).

Diagnostic characters. The presence of a short (18–36 μm long) single pars ventralis together with a thumbnail-like virga will separate the species from other species of the *longicrus* group.

Male ($n = 9–11$, except when otherwise stated). Total length 1.72–2.11, 2.00 mm. Wing length 1.08–1.29, 1.21 mm. Total length / wing length 1.58–1.81, 1.67. Wing length / length of profemur 2.81–3.04, 2.97.

Coloration. Brown.

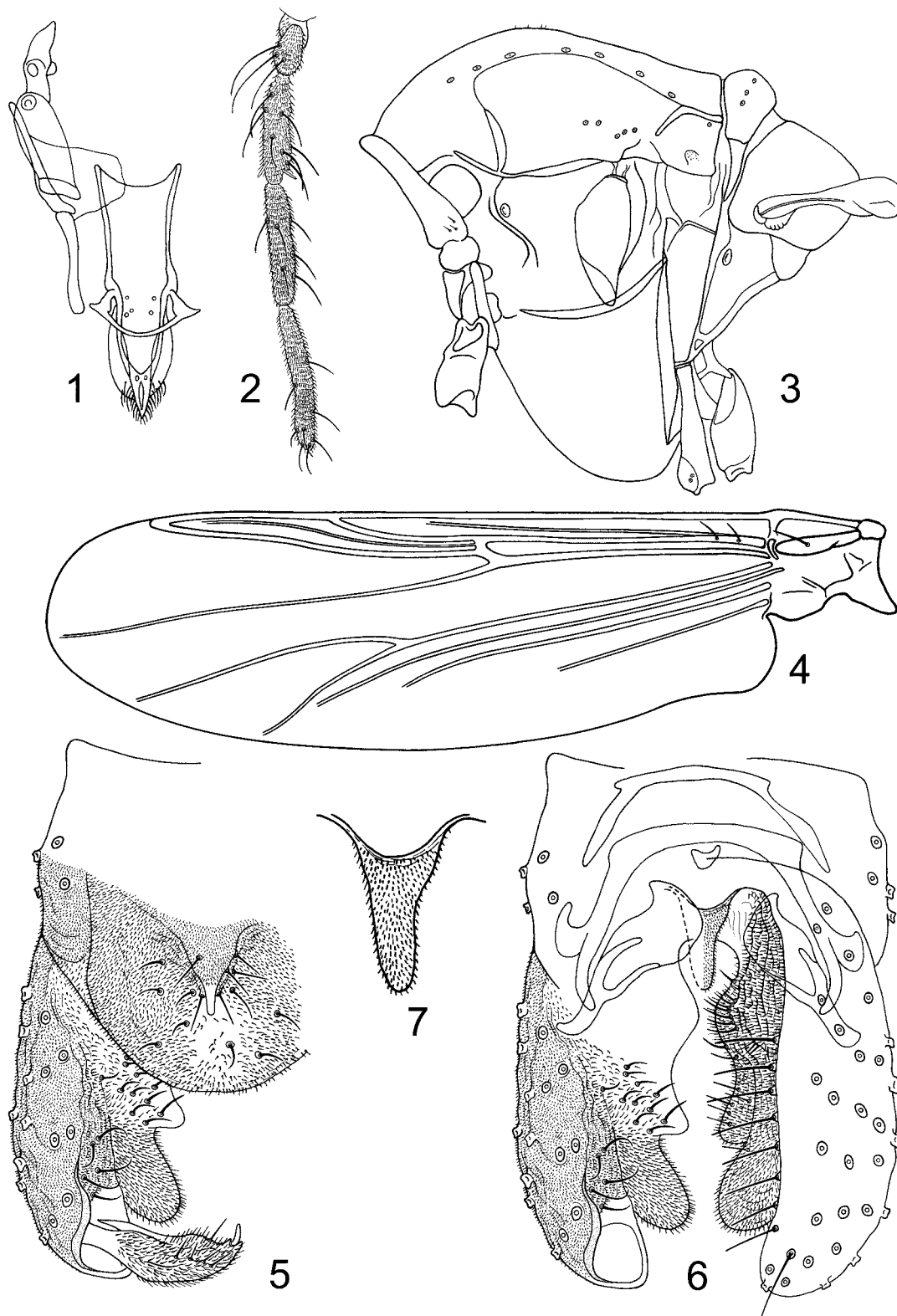
Head. AR 0.64–0.84, 0.71. Ultimate flagellomere 223–328, 322 μm long. Temporal setae 5–9, 7; consisting of 1–3, 2 inner verticals; 0–3, 1 outer verticals and 1–4, 3 postorbital. Clypeus with 8–16, 11 setae. Tentorium, stipes, and cibarial pump as in Figure 1. Tentorium 97–128, 113 μm long; 20–34, 26 μm wide. Stipes 118–143, 134 μm long; 23–59, 44 μm wide. Palpomere (Fig. 2) lengths (in μm): 16–30, 23; 29–45, 39; 66–91, 80; 79–98, 85; 100–138, 118. Third palpomere with 1 sensilla clavata; 9–16, 12 μm long.

Thorax (Fig. 3). Median antepnotal lobes comparatively well developed; antepnotum with 1–4, 2 weak lateral setae. Dorsocentrals 7–9, 8; acrostichals 5–11, 7 (8), strong; prealars 3–6, 4 with 0–2, 1 anteriorly; supraalar 0–1, 1. Scutellum with 4–8, 6 setae.

Wing (Fig. 4). VR 1.32–1.41, 1.37. Anal lobe reduced. Costal extension 0–23, 6 μm long. R_{4+5} ending slightly proximal to apex of M_{3+4} ; Cu_1 curved. Brachiolum with 1 seta; R with 0–3, 1 setae; other veins bare.

Legs. Spur of fore tibia 32–41, 36 μm long; spurs of mid tibia 16–23, 20 μm and 11–20, 15 μm long; of hind tibia 23–48, 41 μm and 11–16, 15 μm long. Width at apex of fore tibia 20–27, 25 μm ; of mid tibia 23–27, 25 μm ; of hind tibia 26–41, 34 μm . Comb with 12–14, 13 setae; longest 27–34, 31 μm long; shortest 16–25, 19 μm long. Length (in μm) and proportions of legs as in Table 1.

Hypopygium (Figs 5–6). Anal point 9–26, 15 μm long, with 4–11, 7 setae at base; tergite IX with 5–17, 10 minute additional setae. Laterosternite IX with 5–8, 6 setae. Phallapodeme 54–73, 61 μm long. Transverse sternapodeme 48–66, 58 μm long, with weak oral projections. Virga 7–14, 9 μm long, thumbnail-like. Pars ventralis (Fig. 7) single, 18–36, 29 μm long; 7–11, 9 μm wide at apex. Gonocoxite 132–173, 150 μm long. Superior volsella present as dorsal swelling of inner margin of gonocoxite, reaching to 0.46 gonocoxite length. Inferior volsella and posterior lobe well developed, reaching to 0.59 and 0.76 gonocoxite length, respectively. Gonostylus 52–64, 59 μm long; megaseta 6–12, 8 μm long. HR 2.32–2.78, 2.53. HV 3.12–3.91, 3.38.



FIGURES 1–7. *Allocladius bilobulatus* (Edwards, 1931) **comb. n.**, male. **1**—tentorium, stipes, and cibarial pump; **2**—palp; **3**—thorax; **4**—wing; **5**—hypopygium, dorsal aspect; **6**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; **7**—pars ventralis.

TABLE 1. Length (in μm) and proportions of legs of *Allocladius bilobulatus* (Edwards), male (n = 10–11).

	fe	ti	ta ₁	ta ₂
P ₁	346–436, 407	410–544, 497	212–241, 223	130–166, 137
P ₂	382–497, 461	392–510, 475	173–236, 220	97–146, 115
P ₃	396–504, 472	428–547, 511	220–295, 259	119–151, 137
	ta ₃	ta ₄	ta ₅	LR
P ₁	86–112, 94	43–72, 58	36–50, 43	0.36–0.48, 0.44
P ₂	68–113, 86	40–71, 54	32–52, 40	0.43–0.49, 0.46
P ₃	95–133, 104	43–65, 54	29–52, 40	0.41–0.60, 0.51
	BV	SV	BR	
P ₁	2.99–3.68, 3.39	3.85–4.22, 4.04	2.9–3.8, 3.3	
P ₂	3.04–4.17, 3.93	3.88–4.53, 4.25	3.2–4.2, 3.6	
P ₃	3.24–3.84, 3.53	3.41–4.67, 3.81	3.8–6.6, 5.1	

Female (n = 1). Total length 1.79 mm. Wing length 1.04 mm. Total length / wing length 1.71. Wing length / length of profemur 3.25.

Coloration. Brown.

Head. AR 0.35. Lengths / width (in μm) of flagellomeres: 52/20, 39/20, 35/19, 36/18, 59/17. Temporal setae 9, including 5–6 inner verticals and 3–4 outer verticals. Clypeus with 7 setae. Tentorium, stipes, and cibarial pump as in Figure 8. Tentorium 91 μm long, 18 μm wide. Stipes 111 μm long, 39 μm wide. Palpomere (Fig. 9) lengths (in μm): 20, 27, 57, 68, 98. Third palpomere with 2 sensilla clavata, longest 11 μm long. Coronal suture 41 μm long.

Thorax (Fig. 10). Median anteprenotal lobes well developed, anteprenotum with 1 lateral seta. Dorsocentrals 10, acrostichals 6, prealars 4, supraalar 1. Scutellum with 6 setae.

Wing (Fig. 11). VR 1.43. Anal lobe well developed. Costal extension 41 μm long. R₄₊₅ ending above apex of M₃₊₄, Cu₁ slightly sinuate. Brachiolum with 1 setae, costa between FR and apex of R₄₊₅ with 26 non-marginal setae, costal extension with 3 non-marginal setae, R with 6, R₁ with 4, R₄₊₅ with 13 setae, other veins bare.

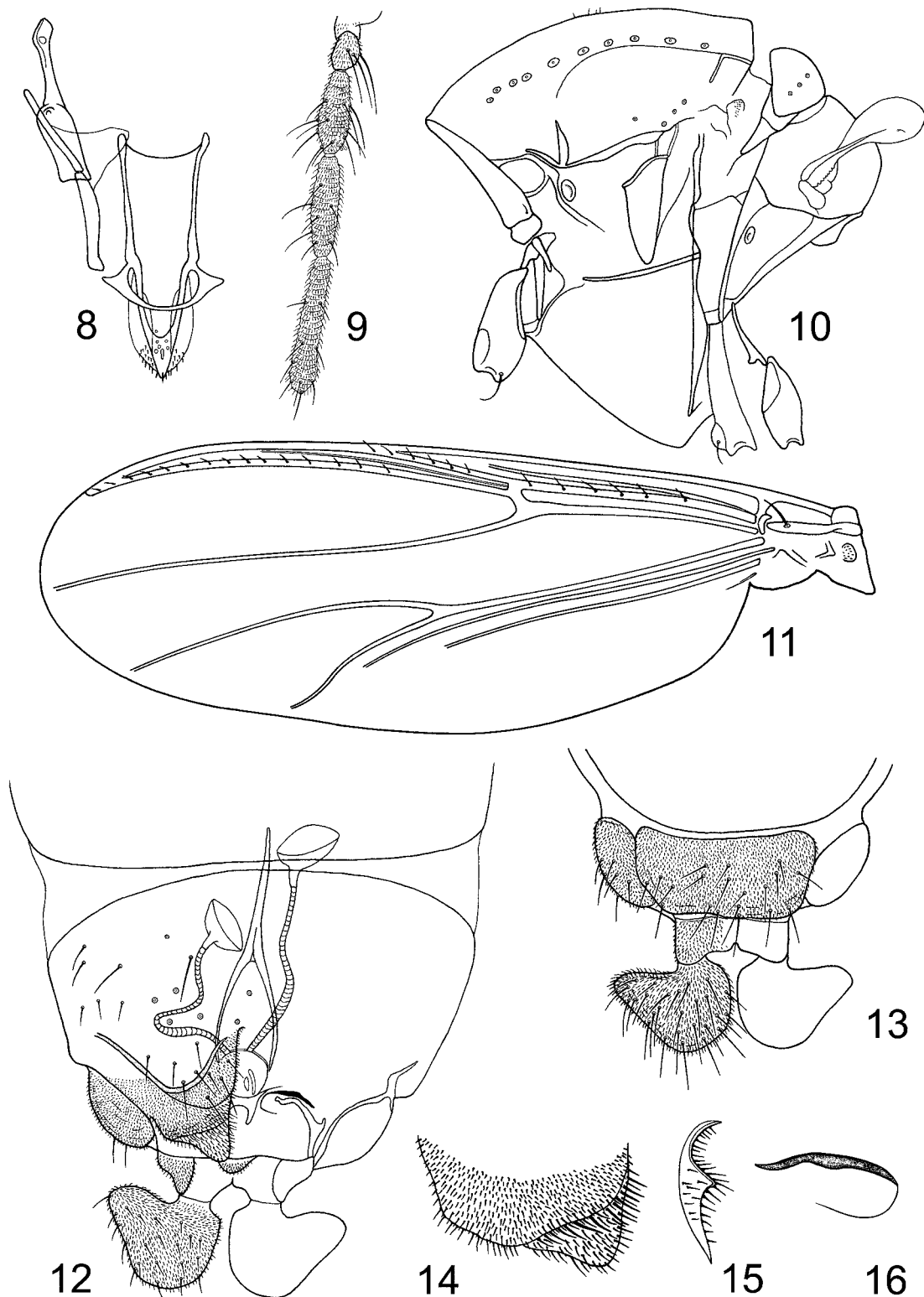
Legs. Spur of fore tibia 23 μm long, spurs of mid tibia 16 μm and 14 μm long, of hind tibia 32 μm and 11 μm long. Width at apex of fore tibia 23 μm , of mid tibia 23 μm , of hind tibia 27 μm . Comb of 13 setae, shortest 16 μm long, longest 25 μm long. Length and proportions of legs as in Table 2.

TABLE 2. Length (in μm) and proportions of legs of *Allocladius bilobulatus* (Edwards), female (n = 1).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
P ₁	310	360	180	101	68	34	29	0.50	3.66	3.72	2.6
P ₂	389	396	176	101	58	34	25	0.44	4.41	4.45	2.3
P ₃	382	421	220	97	90	32	25	0.52	4.18	3.65	3.2

Abdomen. Tergites I–VIII with 10, 11, 18, 20, 21, 25, 23 and 21 setae, respectively. Sternite I bare, S II–VIII with 7, 6, 10, 10, 14, 15 and 28 setae, respectively.

Genitalia (Figs 12–15). Gonocoxite low, without posterior projection, with 9 moderately strong setae. Tergite IX apparently undivided, with altogether about 20 setae. Cercus 59 μm long. Segment X with broadly triangular, rounded posterolateral corners. Seminal capsule 36 μm long, 36 μm wide, including 11 μm long neck, neck 3 μm wide at apex, microtrichia not observed, spermathecal ducts with loop, apparently without bulbs and with common opening. Notum 91 μm long.



FIGURES 8–16. *Allocladius bilobulatus* (Edwards, 1931) **comb. n.**, female. **8**—tentorium, stipes, and cibarial pump; **9**—palp; **10**—thorax; **11**—wing; **12**—genitalia, ventral aspect; **13**—genitalia, dorsal aspect; **14**—ventrolateral lobe; **15**—dorsomesal lobe; **16**—apodeme lobe.

Pupa and larva. Unknown.

Remarks. The single female is not in a good position on the slide. It may be that tergite IX is more divided into setigerous protrusions and that the posterolateral corners of segment X are more pointed than shown in the drawing.

Distribution and biology. The species is known from Argentina, Chile and Peru. In Peru it was swarming in the afternoon close to the ground along the banks of a fast flowing river at 1.900 m a.s.l. In central Chile it was netted along the banks of a rather fast flowing river at 1.850–1.900 m a.s.l. and taken swarming in late afternoon above 1.5–2.0 m high plants in a garden at about 500 m a.s.l.

Allocladius fortispinatus (Edwards) comb. n.

(Figs 17–19)

Spaniotoma (*Smittia*) *fortispinata* Edwards, 1931: 296.

Bryophaenocladus fortispinata (Edwards), Ferrington and Sæther (1995: 57).

Bryophaenocladus fortispinatus (Edwards), Spies and Reiss (1996: 75).

Material examined. ARGENTINA: Provincia Río Negro, Bariloche, male holotype, 23–28.x.1926, F.W. Edwards (BM1927–63, BMNH).

Diagnostic characters. Differs from other members of the group by having parallel-sided anal point, R_{4+5} ending distal to end of M_{3+4} , and apparently only 2 acrostichals.

Male (n = 1). Total length 2.17 mm. Wing length 1.33 mm. Total length / wing length 1.63. Wing length / length of profemur 3.0.

Coloration. Dark brown.

Head. Antenna lost. Temporal setae including 2 postorbitals, inner verticals and outer verticals not observed. Clypeus with 8 setae. Tentorium 120 μ m long. Stipes 100 μ m long. First palpomere 20 μ m long, second palpomere 34 μ m long, remaining palpomeres lost.

Thorax. Median anteprenotal lobes well developed, lateral setae not apparent. Dorsocentrals 8, acrostichals 2, prealars 2, supraalar absent. Scutellum with 2 setae.

Wing (Fig. 17). Anal lobe weak. Cu_1 strongly sinuate. VR 1.40. Costal extension 90 μ m long. All veins bare.

Legs. Spurs of mid tibia 18 μ m and 14 μ m long, hind tibial spurs broken. Length (in μ m) and proportions of legs as in Table 3.

TABLE 3. Length (in μ m) and proportions of legs of *Allocladius fortispinatus* (Edwards), male (n = 1).

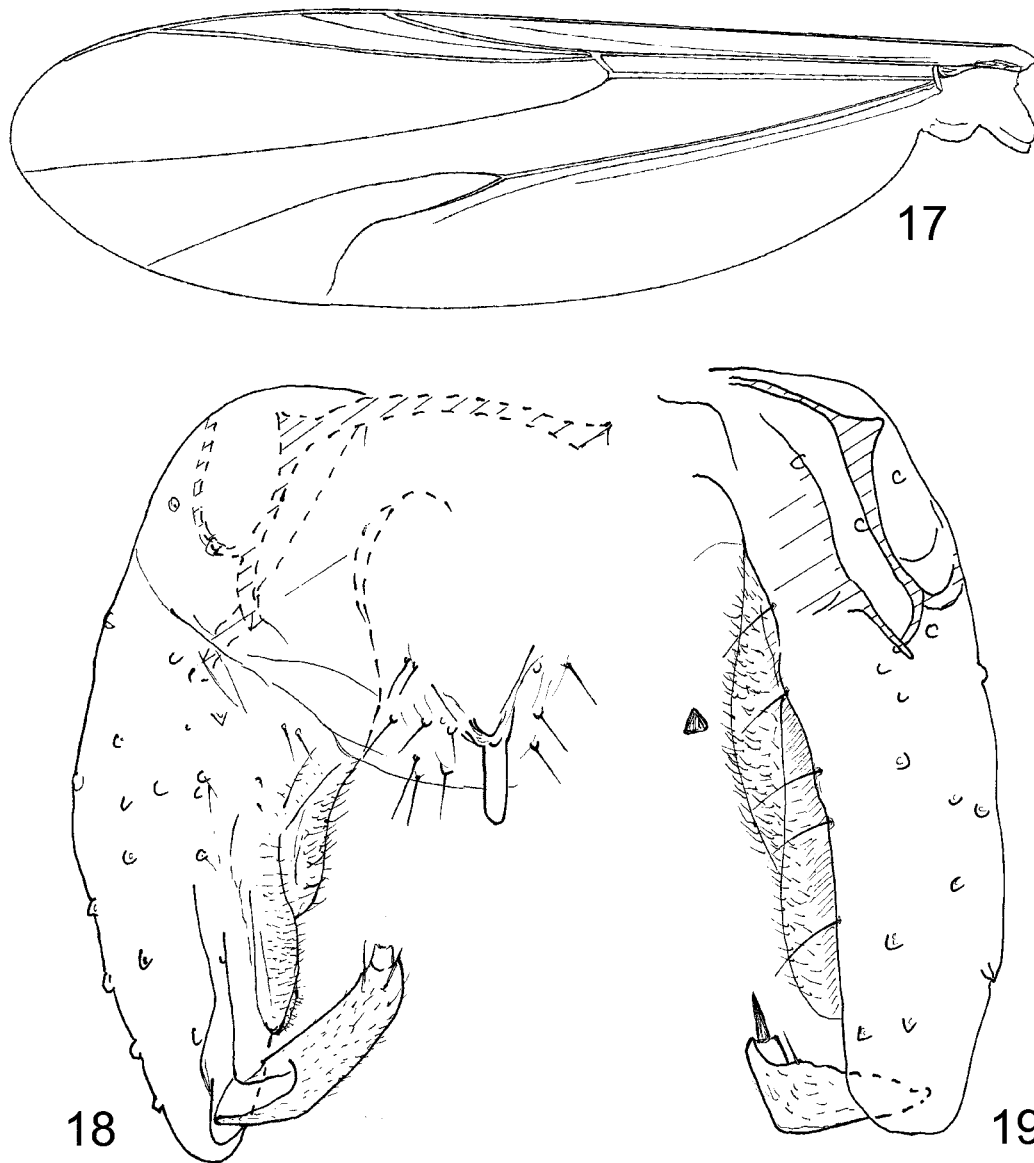
	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
P ₁	443	451	–	–	–	–	–	–	–	–	–
P ₂	451	451	197	123	90	49	–	0.44	–	–	–
P ₃	467	517	287	164	139	49	–	0.56	–	–	–

Hypopygium (Figs 18–19). Anal point extending beyond posterior margin of tergite IX, parallel-sided with rounded apex, 19 μ m long, 5 μ m wide; base elevated; tergite IX with 12 setae. Laterosternite IX with 4–6 setae. Phallapodeme 58 μ m long. Transverse sternapodeme 60 μ m long, arcuate, with well developed oral projections. Apparent virga 6 μ m long, 5 μ m wide, dark. Gonocoxite 146 μ m long, with 7 long ventral setae along medioventral margin. Superior volsella apparently slightly developed as basal swelling fused with long, narrow and adpressed inferior volsella covered by microtrichia and small marginal setae. Gonostylus comparatively straight, 54 μ m long; megaseta 12 μ m long. HR 2.70. HV 4.02.

Remarks. What appears to be the virga in this single specimen is displaced posteriorly and reversed; possibly this is not a virga. However, there is no other structure that could indicate a virga and the apparent virga correspond to that of other members of the group. Only two acrostichals were observed. However, except for this character other details are quite similar to other species of the genus such as wing venation, anal point and gonostylus. It is not unconceivable that there could be more acrostichals as the ones observed are rather weak as is common when there are more acrostichals and not relatively robust as when there are only two acrostichals.

The female paratypes are from different localities and there is no reason to expect that they should belong to the same species. We thus did not examine them.

Distribution. The holotype male is known from Bariloche in Argentina (Edwards 1931; Spies & Reiss 1996).



FIGURES 17–19. *Allocladius fortispinatus* (Edwards, 1931) **comb. n.**, male. **17**—wing; **18**—anal point and tergite IX and dorsal aspect of left gonocoxite and gonostylus; **19**—hypopygium, ventral aspect of right side.

***Allocladius globosus* sp. n.**

(Figs 20–26)

Type material. Holotype male, **CHILE: Región V**, Río Aconcagua, West of Las Vizcachas, 32°51.391'S, 70° 28.668'W, 1.096 m a.s.l., 12.xi.1998, hand net, T. Andersen (ZMBN Type No. 423). Paratypes: 1 male, **Región VI**, Pichilemu, 3 km West of Alcones, 34°23.486'S, 71°46.807'W, 220 m a.s.l., 17.xi.1998, hand net, T. Andersen (ZMBN). 1 male, **Región XI**, Río Blanco, 20 km South of Puerto Aisén, 13.i.1996, hand net, T. Andersen (ZMBN).

Diagnostic characters. The presence of circular single pars ventralis about as long as wide and with setae together with the absence of a posterior lobe of the inferior volsella will separate the species from other species with pars ventralis.

Etymology. From Latin, *globosus*, spherical, referring to the round pars ventralis.

Male (n = 3, except when otherwise stated). Total length 1.83–2.24 mm. Wing length 1.07–1.26 mm. Total length / wing length 1.67–1.78. Wing length / length of profemur 2.89–3.00.

Coloration. Fully brown.

Head. AR 0.88–1.09. Ultimate flagellomere 308–409 μm long. Temporal setae 4–5, consisting of 1–2 weak inner verticals, 2–4 strong outer verticals, and 0–1 postorbital. Clypeus with 4–7 setae. Tentorium, stipes, and cibarial pump as in Figure 20. Tentorium 79–113 μm long, 26–30 μm wide. Stipes 109–128 μm long, 34–41 μm wide. Palpomere (Fig. 21) lengths (in μm): 23–30, 30–45, 68–83, 60–75, 86–105. Third palpomere with 1 lanceolate sensilla clavata, 15 μm long.

Thorax (Fig. 22). Median anteprenotal lobes comparatively well developed, anteprenotum with 1–2 lateral setae. Dorsocentrals 7–8, acrostichals about 10 (1), prealars 4, supraalar 1. Scutellum with 4 setae.

Wing (Fig. 23). VR 1.30–1.40. Anal lobe distinct, slightly projecting. Costal extension absent, but indication of 110–130 μm long false vein. R_{4+5} ending slightly proximal to apex of M_{3+4} ; Cu_1 sinuous. Brachiolum with 1 seta, R with 2 setae, other veins bare.

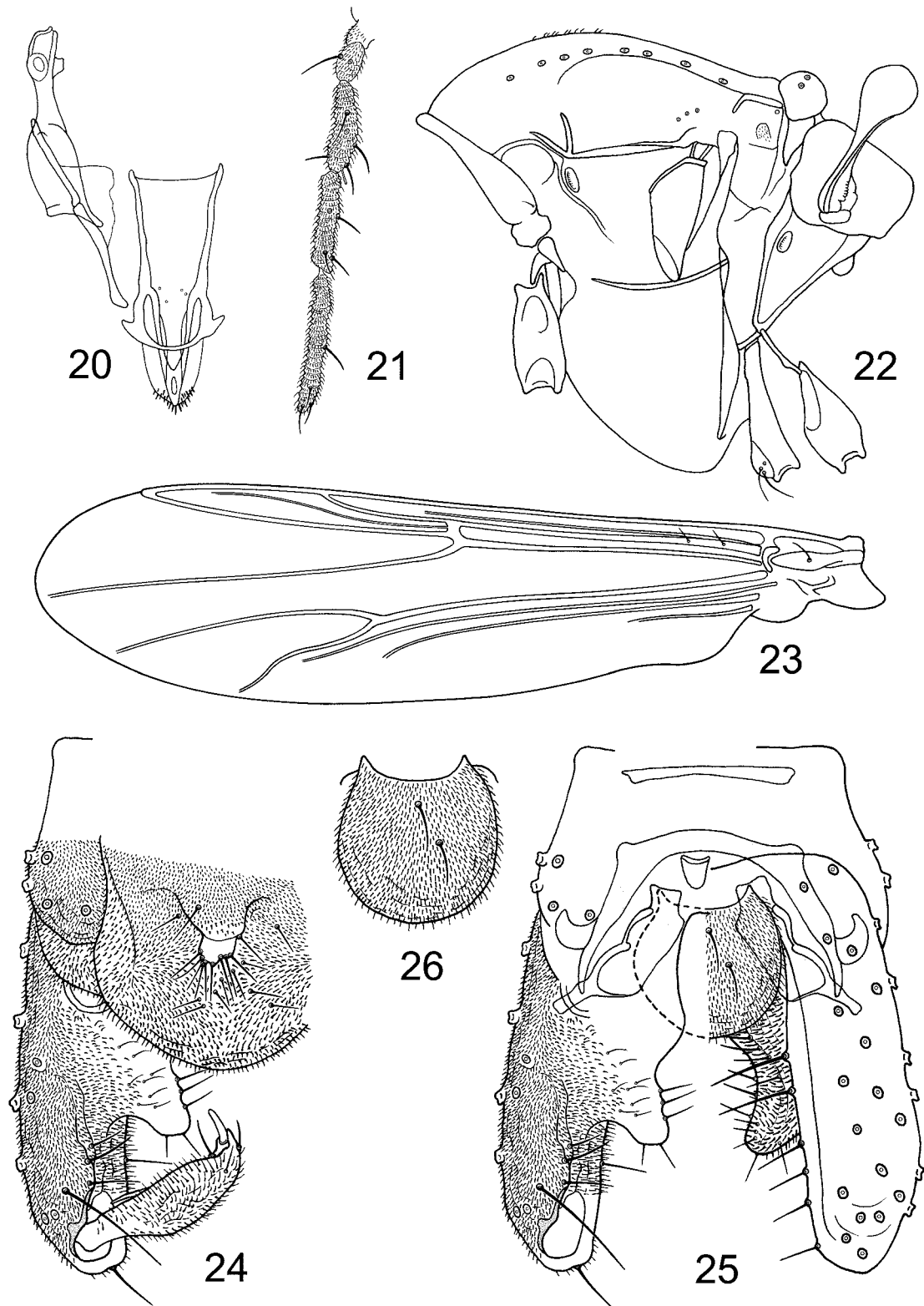
Legs. Spur of fore tibia 38 μm long, spurs of mid tibia 23–26 μm and 19 (2) μm long, of hind tibia 38–41 μm and 19 μm long. Width at apex of fore- and mid tibia 26–28 μm , of hind tibia 34–38 μm . Comb of 11–12 setae, longest 26–30 μm long, shortest 15–29 μm long. Length and proportions of legs as in Table 4.

TABLE 4. Length (in μm) and proportions of legs of *Allocladius globosus* sp. n., male (n = 3).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
P ₁	367–522	450–698	194–241	122–191	79–122	43–65
P ₂	414–605	425–655	191–284	94–151	68–112	36–76
P ₃	432–623	439–670	227–540	112–284	97–162	47–126
	ta ₅	LR	BV	SV	BR	
P ₁	36–68	0.37–0.46	3.11–3.77	4.04–4.88	2.3–4.4	
P ₂	36–61	0.38–0.50	3.68–4.66	4.18–5.17	2.8–4.4	
P ₃	36–72	0.47–0.55	3.28–3.88	3.51–4.14	3.8–5.8	

Hypopygium (Figs 24–25). Anal point 26–41 μm long, including 15 μm long sclerotized basal part with 7–10 setae and 11–26 μm long bare, hyaline distal part. Tergite IX with 9–10 setae in addition to those on anal point. Laterosternite IX with 2–5 setae. Phallapodeme 53–56 μm long. Transverse sternapodeme 41–53 μm long, with weak oral projections. Virga 11–15 μm long, thumbnail-like. Pars ventralis (Fig. 26) single, 45–60 μm long, 45–56 μm wide. Gonocoxite 131–143 μm long. Superior volsella present as dorsal swelling of inner margin of gonocoxite, reaching to 0.42–0.50 gonocoxite length. Inferior volsella well developed, reaching to 0.63–0.69 gonocoxite length; no apparent posterior lobe. Gonostylus 53–60 μm long; megaseta 11–13 μm long. HR 2.38–2.50. HV 3.38–3.73.

Distribution and biology. The species is known from southern and central Chile where it has been netted on the banks of streams and rivers. The altitude range is from about 200 to 1.000 m a.s.l.



FIGURES 20–26. *Allocladius globosus* sp. n., male. **20**—tentorium, stipes, and cibarial pump; **21**—palp; **22**—thorax; **23**—wing; **24**—hypopygium, dorsal aspect; **25**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; **26**—pars ventralis.

Allocladius neobilobulatus (Paggi) comb. n.
(Figs 27–37)

Pseudosmittia neobilobulata Paggi, 1993: 172.

Material examined. ARGENTINA: Buenos Aires, Laguna de Lobos, 2 male paratypes, 15.vi.1989, A. Paggi (ILLP). CHILE: **Región VI**, Río Claro South of Molina, 35°09.171'S, 71°17.054'W, 212 m a.s.l., 2 males, 18.xi.1998, hand net, T. Andersen (ZMBN). **Región XI**, Laguna Cea, 20 km Southwest of Coihaique, 4 males, 14.ii.1996, hand net, T. Andersen (ZMBN). BOLIVIA: Between Oruru and Cochabamba, side arm of a dam, 3.000 m a.s.l., 1 male, 1 mature male pupa, 2 pupal exuviae, 14.vii.1976, E.J. Fittkau (ZSM).

Diagnostic characters. The two broad, large and lobe-like pars ventralis will separate the male imago from all other *Allocladius* species. The pupa is very similar to that of the Holarctic *A. nanseni* (Kieffer), but can be distinguished by having a papilla on the genital sac which is nearly twice as long as wide and more numerous spinules on the posterior sternal conjunctives.

Male (n = 8–10, except when otherwise stated). Total length 1.85–2.74, 2.11 mm. Wing length 1.08–1.67, 1.25 mm. Total length / wing length 1.45–1.82, 1.66. Wing length / length of profemur 2.82–3.16, 2.96.

Coloration. Brownish black.

Head. AR 0.82–1.23, 0.99. Ultimate flagellomere 281–443, 340 µm long. Temporal setae 4–9, 6; consisting of 0–3, 2 inner verticals; 0–3, 2 outer verticals and 0–4, 2 postorbitals. Clypeus with 4–9, 6 setae. Tentorium, stipes, and cibarial pump as in Figure 27. Tentorium 82–127, 106 µm long; 20–30, 24 µm wide. Stipes 93–127, 105 µm long; 27–39, 32 (6) µm wide. Palpomere (Fig. 28) lengths (in µm): 16–25, 20; 27–43, 35; 45–75, 56; 52–82, 59; 70–109, 83. Third palpomere with 1 lanceolate sensilla clavata; 9–11, 11 (7) µm long.

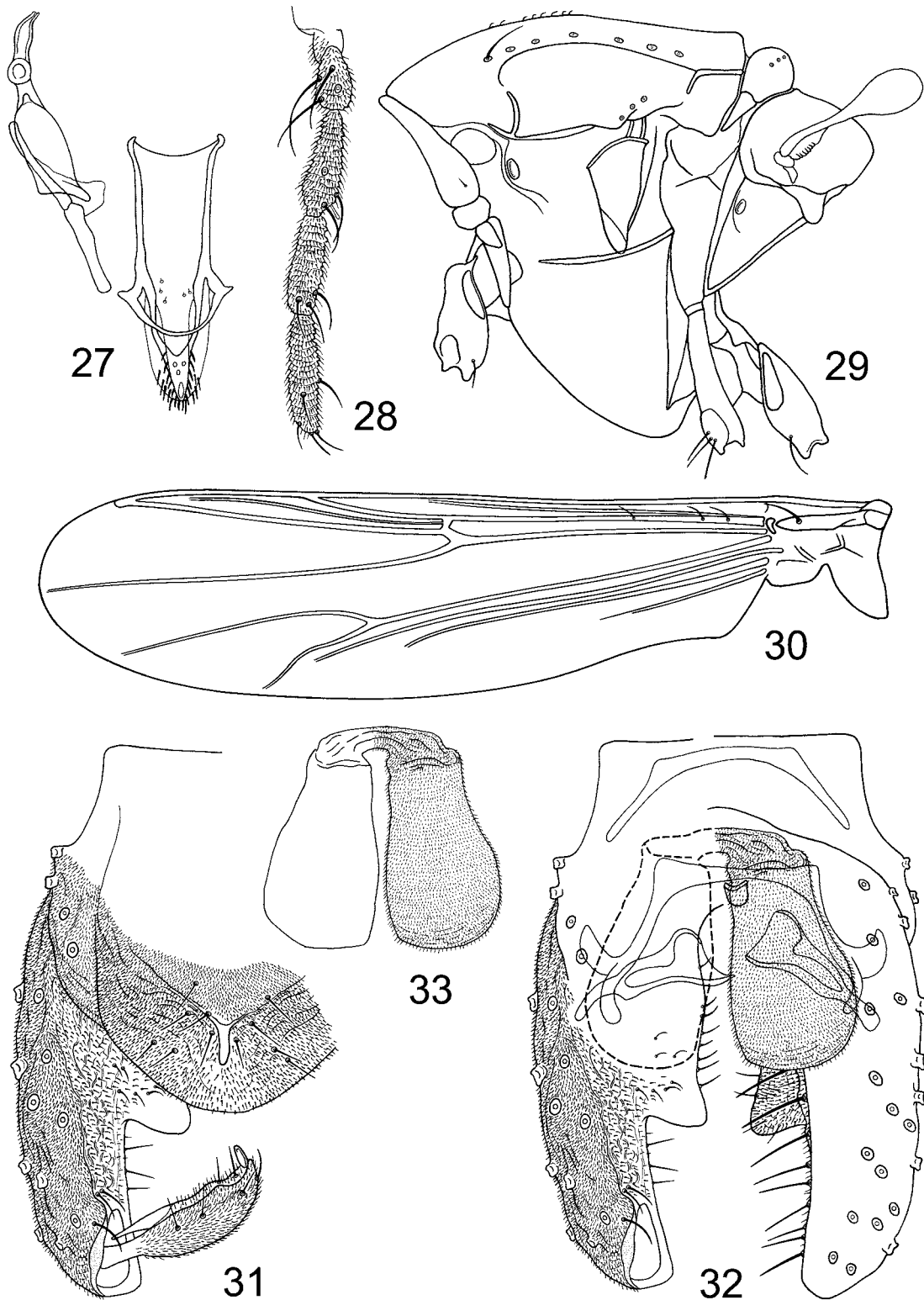
Thorax (Fig. 29). Median anteprenotal lobes well developed; anteprenotum with 0–1, 1 lateral seta. Dorsocentrals 7–8, 7; acrostichals 4–8, 6, simple or scalpellate; prealars 2–3, 3; supraalar 0–1, 0. Scutellum with 5–8, 7 setae.

Wing (Fig. 30). VR 1.27–1.72, 1.35. Anal lobe projecting. Costal extension 0–50, 13 µm long. R₄₊₅ ending above apex of M₃₊₄; Cu₁, slightly sinuate. Brachiolum with 1 seta; R with 2–3, 2 setae; other veins bare.

Legs. Spur of fore tibia 34–47, 39 µm long; spurs of mid tibia 18–34, 21 µm and 11–19, 14 µm long; of hind tibia 31–43, 36 µm and 9–18, 14 µm long. Width at apex of fore tibia 22–29, 25 µm; of mid tibia 20–34, 25 µm; of hind tibia 27–45, 35 µm. Comb of 11–14, 13 setae; longest 20–40, 28 µm long; shortest 15–19, 16 µm long. Length and proportions of legs as in Table 5.

TABLE 5. Length (in µm) and proportions of legs of *Allocladius neobilobulatus* (Paggi), male (n = 9).

	fe	ti	ta ₁	ta ₂
P ₁	367–522, 419	450–698, 536	194–241, 216	122–191, 144
P ₂	414–605, 482	425–655, 511	191–284, 227	94–151, 113
P ₃	432–623, 502	439–970, 546	227–540, 303	112–284, 155
	ta ₃	ta ₄	ta ₅	LR
P ₁	79–122, 95	43–65, 58	36–68, 47	0.37–0.48, 0.42
P ₂	68–112, 84	36–76, 51	36–61, 42	0.38–0.50, 0.44
P ₃	97–162, 123	47–126, 65	36–72, 46	0.47–0.55, 0.51
	BV	SV	BR	
P ₁	3.11–3.77, 3.45	4.04–4.88, 4.33	2.3–4.4, 3.0	
P ₂	3.68–4.66, 4.24	4.18–5.17, 4.51	2.8–4.4, 3.6	
P ₃	3.28–3.88, 3.61	3.51–4.12, 3.78	3.8–5.8, 4.4	

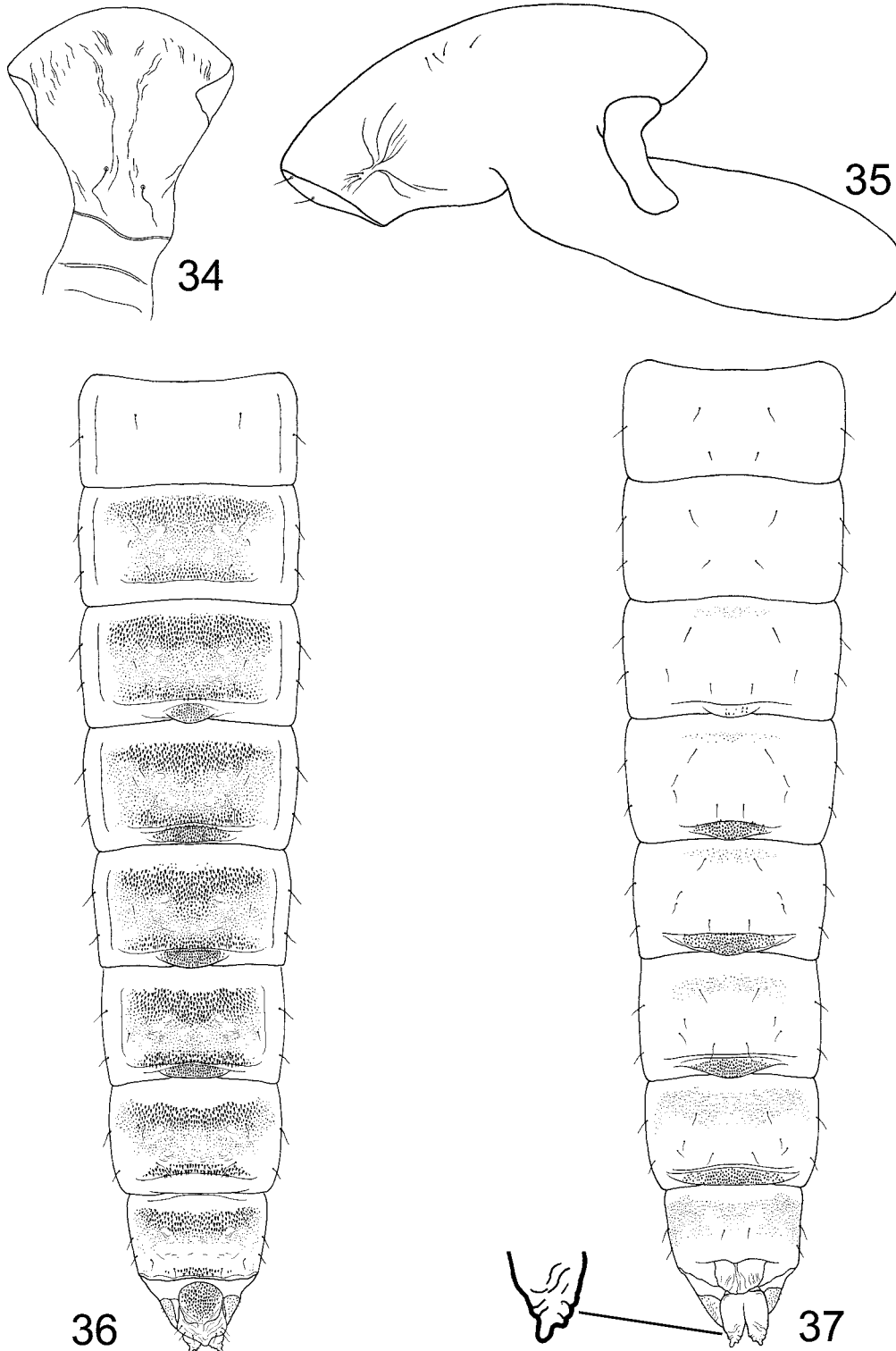


FIGURES 27–33. *Allocladius neobilobulatus* (Paggi, 1993) **comb. n.**, male. 27—tentorium, stipes, and cibarial pump; 28—palp; 29—thorax; 30—wing; 31—hypopygium, dorsal aspect; 32—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; 33—pars ventralis.

Hypopygium (Figs 31–32). Anal point 11–43, 24 μm long, tapering to pointed apex; tergite IX with 10–24, 15 setae including setae on anal point. Laterosternite IX with 2–5, 4 setae. Phallapodeme 59–79, 70 (7) μm long. Transverse sternapodeme 45–75, 57 μm long, with weak oral projections. Virga 9–18, 13 μm long;

plate-like. Pars ventralis (Fig. 33) double, 75–120, 93 μm long; 34–71, 42 μm wide; reaching to 0.50–0.76 gonocoxite length. Gonocoxite 140–179, 160 μm long. Inferior volsella reaching to 0.65–0.69 gonocoxite length; no apparent posterior lobe. Gonostylus 61–79, 68 μm long; megaseta 6–9, 8 μm long. HR 2.07–2.51, 2.36. HV 2.91–3.88, 3.22.

Pupa (n = 2). Total length 3.38–3.42 mm. Exuviae tinged with brownish yellow along margins of cephalothorax and anal segments, particularly on margin of wing sheath and male genital sac.



FIGURES 34–37. *Allocladius neobilobulatus* (Paggi, 1993) **comb. n.**, female pupa. **34**—frontal apotome; **35**—thorax; **36**—tergites; **37**—sternites with detail of the papilla on the genital sac.

Cephalothorax (Figs 34–35). Frontal apotome with some rugulosity, without warts, with frontal setae. All cephalothoracic setae about 45–85 µm long. Distance between Dc₁ and Dc₂ 9–10 µm, between Dc₂ and Dc₃ 14–25 µm, between Dc₃ and Dc₄ 50–55 µm.

Abdomen (Figs 36–37). Tergite I bare; T II–VIII with strong anterior and posterior shagreen, with weaker shagreen covering most of remaining tergites; T IX with strong median shagreen covering most of segment. Sternites I–II bare; S III–V with weak median shagreen, S VI–VII with spinules in anterior 1/3; S VIII with spinules in anterior 1/2; S IX with lateral shagreen. Tergal conjunctive III/IV with 38–84 spinules, IV/V with 137–160, V/VI with 110–150, VI/VII with 90–115 spinules. Sternal conjunctive III/IV with 4–10 spinules, IV/V with 78–100, V/VI with 130–165, VI/VII with 155–200, VII/VIII with 110–119, VIII/IX with 43 spinules in male pupa, none in female pupa. Anal segment with single 27–37 µm long basal seta, three 27–37 µm long apical setae and single 18 µm long median seta. Genital sac of male overreaching anal segment by 96 µm; of female with apical papilla nearly twice as long as wide (papilla also indicated to varying degree in male).

Remarks. The double pars ventralis is unique among orthoclads. However, the pupa is hardly separable from that of the Holarctic *A. nanseni* (Kieffer, 1926).

Distribution and biology. The species is known from two localities in Argentina (Paggi 1993), a high mountain dam in Bolivia and two localities in southern and central Chile where it has been netted along the banks of lakes and rivers. The altitude range is from about 200 to 3.000 m a.s.l.

Allocladius quadrus sp. n.

(Figs 38–44)

Type material. Holotype male, **CHILE: Región XII**, Punta Arenas, Lago El Parrillar, 53°24.444'S, 71°15.823'W, 246 m a.s.l., 10.iii.1999, hand net, T. Andersen (ZMBN Type No. 424). Paratype: 1 male, as holotype (ZMBN).

Diagnostic characters. The presence of a square single pars ventralis much wider than long and without setae together with the tongue-like, strongly projecting inferior volsella and the high antennal ratio will separate the species from other species with pars ventralis.

Etymology. From Latin, *quadra*, a square, referring to the rectangular pars ventralis.

Male (n = 2). Total length 2.65–2.67 mm. Wing length 1.67–1.73 mm. Total length / wing length 1.53–1.60. Wing length / length of profemur 3.05–3.16.

Coloration. Fully brown.

Head. AR 1.40–1.44. Ultimate flagellomere 463–491 µm long. Temporal setae 6–7, consisting of 3–4 weak inner verticals, 2 strong outer verticals, and 1 postorbital. Clypeus with 9–12 setae. Tentorium, stipes, and cibarial pump as in Figure 38. Tentorium 135–143 µm long, 34 µm wide. Stipes 150 µm long, 41–49 µm wide. Palpomere (Fig. 39) lengths (in µm): 26–30, 45–53, 94–98, 143–146. Third palpomere with 2 lanceolate sensilla clavata, 19–21 µm long.

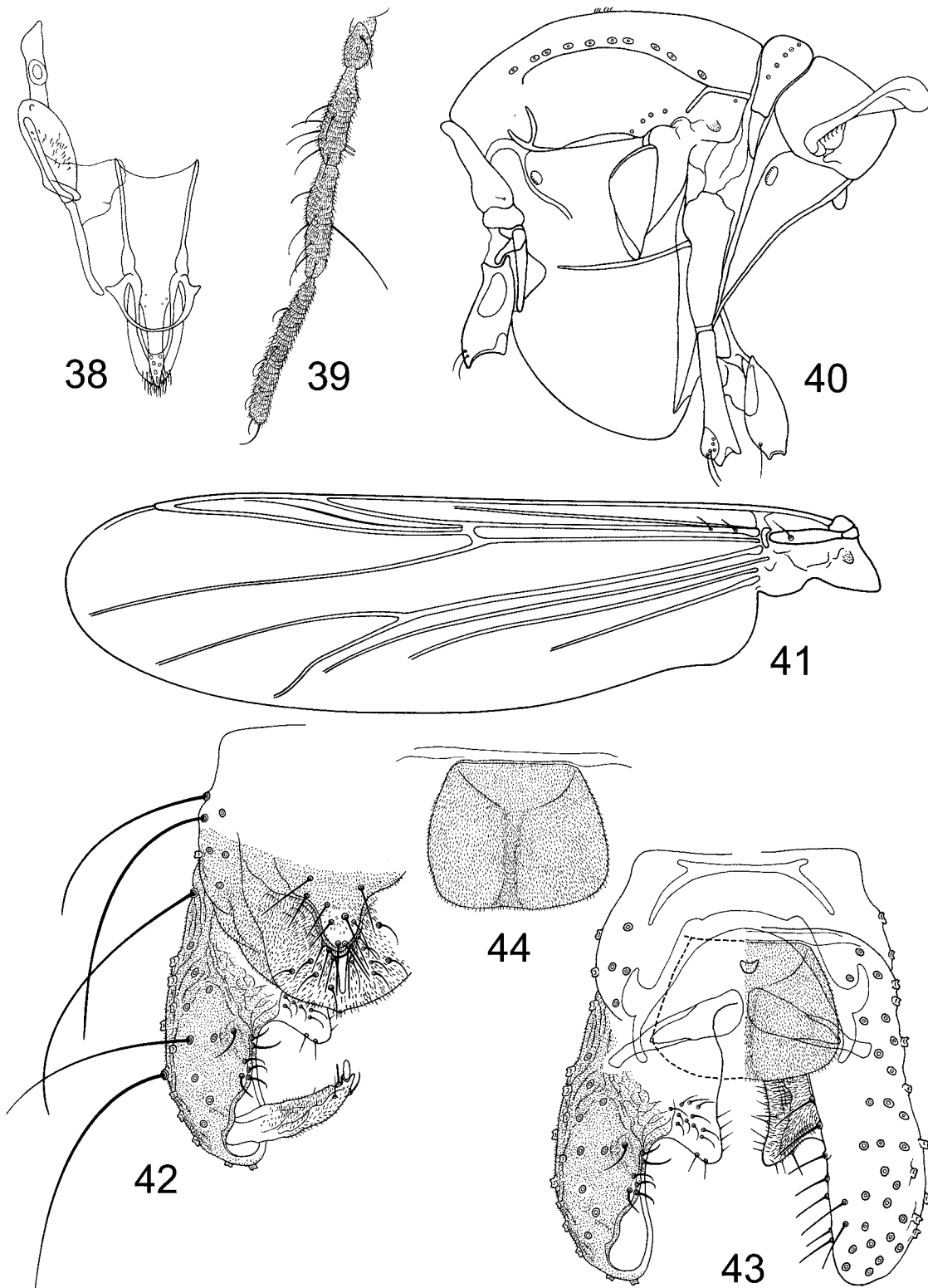
Thorax (Fig. 40). Median anteprenotal lobes comparatively well developed, anteprenotum with 1 very weak lateral seta. Dorsocentrals 10–11, acrostichals 6, prealars 3–4, supraalar 1. Scutellum with 10 setae.

Wing (Fig. 41). VR 1.31–1.32. Anal lobe distinct, slightly projecting. Costal extension absent, but indication of 190–200 µm long false vein. R₄₊₅ ending slightly proximal to apex of M₃₊₄, Cu₁ sinuous. Brachiolum with 1 seta, R with 2 setae, other veins bare.

Legs. Spur of fore tibia 53 µm long, spurs of mid tibia 23–26 µm and 15 µm long, of hind tibia 45–49 µm and 23–26 µm long. Width at apex of fore- and mid tibia 30–36 µm, of hind tibia 45–49 µm. Comb of 14–15 setae, longest 38–45 µm long, shortest 23–30 µm long. Length and proportions of legs as in Table 6.

Hypopygium (Figs 42–43). Anal point 45–49 µm long, including 34 µm long basal sclerotized part with 10–14 setae and 11–15 µm long bare, hyaline distal part. Tergite IX with 8–9 setae in addition to those on anal point. Laterosternite IX with 4–6 setae. Phallapodeme 71–75 µm long. Transverse sternapodeme 45–60 µm long, with weak oral projections. Virga 8–11 µm long, 11 µm wide, thumbnail-like. Pars ventralis (Fig. 44)

single, subquadrangular, 71–75 μm long, 101–113 μm wide, one specimen with slight median concavity. Gonocoxite 184–206 μm long. Superior volsella barely indicated as dorsal swelling of inner margin of gonocoxite, reaching to 0.41–0.45 gonocoxite length. Inferior volsella well developed, reaching to 0.61–0.64 gonocoxite length; no apparent posterior lobe. Gonostylus 79–83 μm long; megaseta 9–11 μm long. HR 2.33–2.50. HV 3.19–3.39.



FIGURES 38–44. *Allostadius quadrus* sp. n., male. **38**—tentorium, stipes, and cibarial pump; **39**—palp; **40**—thorax; **41**—wing; **42**—hypopygium, dorsal aspect; **43**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; **44**—pars ventralis.

TABLE 6. Length (in μm) and proportions of legs of *Allocladius quadrus* sp. n., male (n = 1–2).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
P ₁	548	699–718	298–312	198	132–137	85–90
P ₂	586–605	680–709	293	161	113–123	76–80
P ₃	624–659	718–747	369–378	189–194	161–170	76
	ta ₅	LR	BV	SV	BR	
P ₁	61–66	0.43	3.21–3.24	4.06–4.19	3.0–3.3	
P ₂	57–66	0.41–0.43	3.71–3.86	4.32–4.48	2.8–3.6	
P ₃	66	0.51	3.45–3.56	3.64–3.71	6.0–7.0	

Distribution and biology. The species is known from southernmost Chile, where it was netted on a lake shore at about 250 m altitude in an area with *Notofagus* forest.

Allocladius scrotus sp. n.

(Figs 45–51)

Type material. Holotype male, **ECUADOR: Pichincha Province**, Amaguaña, near Volcano Pasochoa, 0°22'S 78°27'W, 3.000 m a.s.l., 4.ii.1997, hand net, J. Skartveit. (ZMBN Type No. 425). Paratypes: 2 males as holotype (ZMBN).

Diagnostic characters. The presence of a single pars ventralis about half as wide as long and without setae together with the tongue-like, strongly projecting inferior volsella will separate the species from all other *Allocladius* species with pars ventralis.

Etymology. From Latin, *scrotum*, pouch containing the testicles, referring to the pars ventralis.

Male (n = 3, except when otherwise stated). Total length 2.65–2.83 mm. Wing length 1.76–1.89 mm. Total length / wing length 1.47–1.51. Wing length / length of profemur 3.07–3.13.

Coloration. Fully brown.

Head. AR 0.78–0.92. Ultimate flagellomere 406–487 μm long. Temporal setae 7–8, consisting of 3 weak inner verticals, 1 strong outer vertical, and 3–4 postorbital. Clypeus with 13–17 setae. Tentorium, stipes, and cibarial pump as in Figure 45. Tentorium 139–203 μm long, 34–38 μm wide. Stipes 176–191 μm long, 34–53 μm wide. Palpomere (Fig. 46) lengths (in μm): 23–34, 41–45, 79–101, 88–98, 101–128. Third palpomere with 1 (1) lanceolate sensilla clavata, 15 μm long.

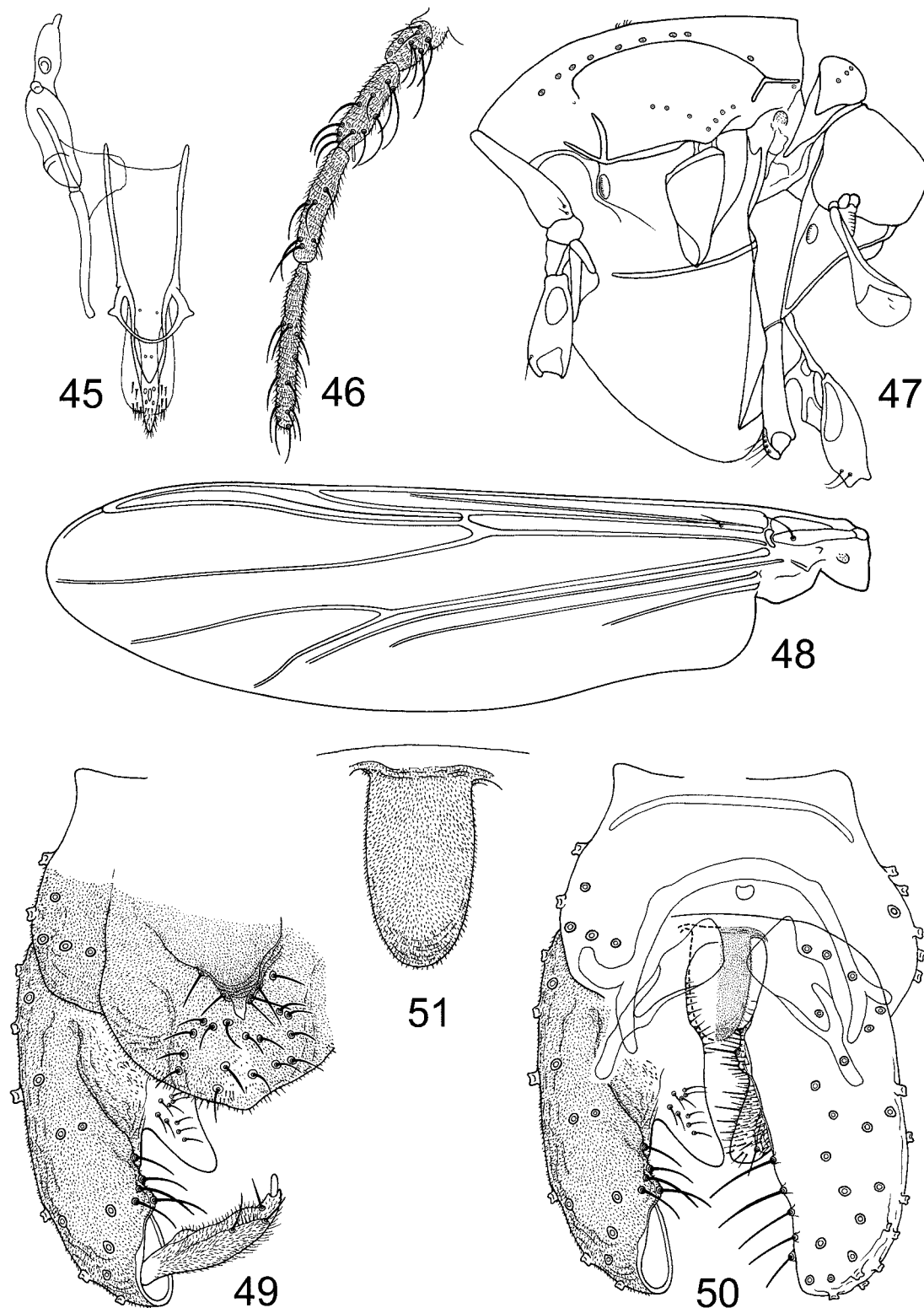
Thorax (Fig. 47). Median anteprenotal lobes comparatively well developed, anteprenotum with 2 weak lateral setae. Dorsocentrals 9, acrostichals 5–7, prealars 4–7, supraalar 1. Scutellum with 6–8 setae.

Wing (Fig. 48). VR 1.25–1.38. Anal lobe distinct, slightly projecting. Costal extension absent, but indication of 100 μm long false vein. R₄₊₅ ending slightly distal to apex of M₃₊₄. Cu₁ sinuous. Brachiolium with 1 seta, R with 1–2 setae, other veins bare.

Legs. Spur of fore tibia 45–53 μm long, spurs of mid tibia 23–26 (2) μm and 19–23 (2) μm long, of hind tibia 56 μm long and 19–23 μm long. Width at apex of fore- and mid tibia 30 μm , of hind tibia 38–41 μm . Comb of 13 setae, longest 30–41 μm long, shortest 19–23 μm long. Length and proportions of legs as in Table 7.

TABLE 7. Length (in μm) and proportions of legs of *Allocladius scrotus* sp. n., male (n = 1–3).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
P ₁	312–331	383–397	–	–	–	–	–	–	–	–	–
P ₂	406	425	–	–	–	–	–	–	–	–	–
P ₃	378	425	246	113	113	47	33	0.58	3.45	3.33	3.3



FIGURES 45–51. *Allostadius scrotus* sp. n., male. **45**—tentorium, stipes, and cibarial pump; **46**—palp; **47**—thorax; **48**—wing; **49**—hypopygium, dorsal aspect; **50**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; **51**—pars ventralis.

Hypopygium (Figs 49–50). Anal point 30–41 μm long, including 19–26 μm long basal sclerotized part with 6 setae and 8–15 μm long distal part with weak microtrichia basally and bare, hyaline apex. Tergite IX with 8–15 setae in addition to those on anal point. Laterosternite IX with 7 setae. Phallapodeme 71–101 μm long. Transverse sternapodeme 45–60 μm long, without oral projections. Virga 8–11 μm long, 8–11 μm wide,

thumbnail-like. Pars ventralis (Fig. 51) single, 45–60 μm long, 26–34 μm wide. Gonocoxite 161–173 μm long. Superior volsella barely indicated as dorsal swelling of inner margin of gonocoxite, reaching to 0.35–0.37 gonocoxite length. Inferior volsella well developed, reaching to 0.60–0.70 gonocoxite length, free part 30–38 μm long; no apparent posterior lobe. Gonostylus 64–68 μm long; megaseta 8–9 μm long. HR 2.39–2.71. HV 3.89–4.09.

Distribution and biology. The species is only known from the type locality in Ecuador where it was netted in an area with grassland at 3,000 m altitude.

Allocladius sp. "Chile"

(Figs 52–55)

Material examined. CHILE: **Región XII**, Tierra del Fuego, river about 9 km West of Carabineros, 54°01'S, 68°55'W, 1 pupal exuviae, 12–13.i.1986, M. Spies (ZSM).

Pupa (n = 1). Total length 3.75 mm. Exuviae with distinct grayish tinge.

Cephalothorax (Figs 52–53). Frontal apotome wrinkled, without warts, with 35 μm long frontal seta. Distance between Dc_1 and Dc_2 18 μm , between Dc_2 and Dc_3 57 μm , between Dc_3 and Dc_4 11 μm .

Abdomen (Figs 54–55). Tergite I bare, T II–VIII with strong anterior and posterior spinules and weaker median spinules covering most of tergite, T IX with extensive median shagreen. Sternites I–II bare or S II with a few posteromedian spinules, S III with weak median spinules, S IV with slightly stronger median spinules, S V–VIII with shagreen in anterior 2/3, S IX bare or with anterolateral shagreen. Tergal conjunctive III/IV with 45 spinules, IV/V with 120, V/VI with 149, VI/VII with 155 spinules. Sternal conjunctive IV/V with 28 spinules, V/VI with 158, VI/VII with 170, VII/VIII with 119 spinules. Setae of anal segment about 50–60 μm long.

Remarks. The pupa differs from that of *A. neobilobulatus* by having bare sternal conjunctives III/IV and VIII/IX. It may well be the pupa of *A. bilobulatus*.

Allocladius sp. "Falkland Islands"

(Figs 56–60)

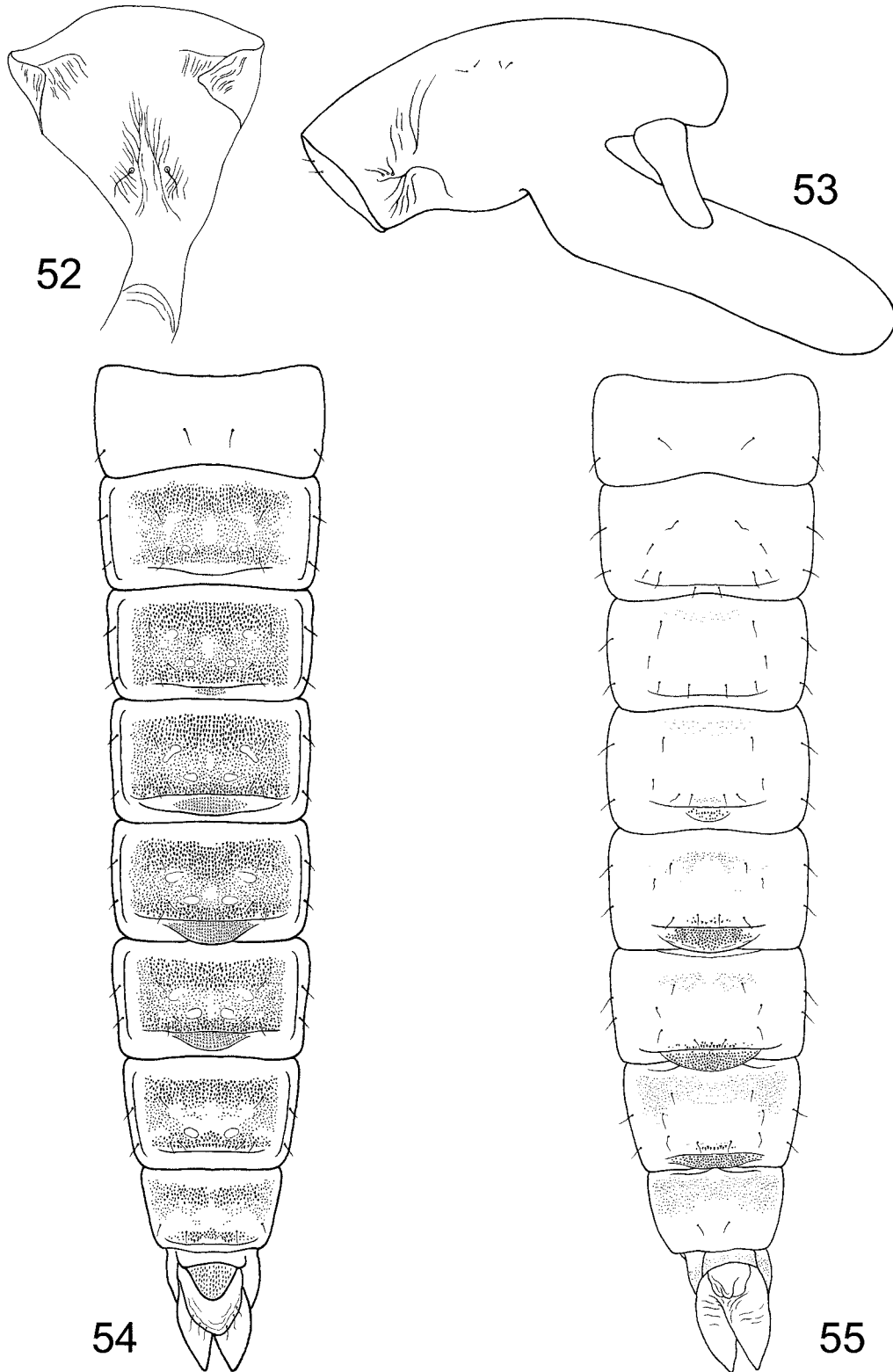
Material examined. FALKLAND ISLANDS (Malvinas): Beauchine Island, 5 larvae, 9–24.xii.1980, in moss (*Bryum*), R.I. Lewis Smith (BMNH).

Larva (n = 3–5, except when otherwise stated). Total length 4.59–5.31, 4.97 mm.

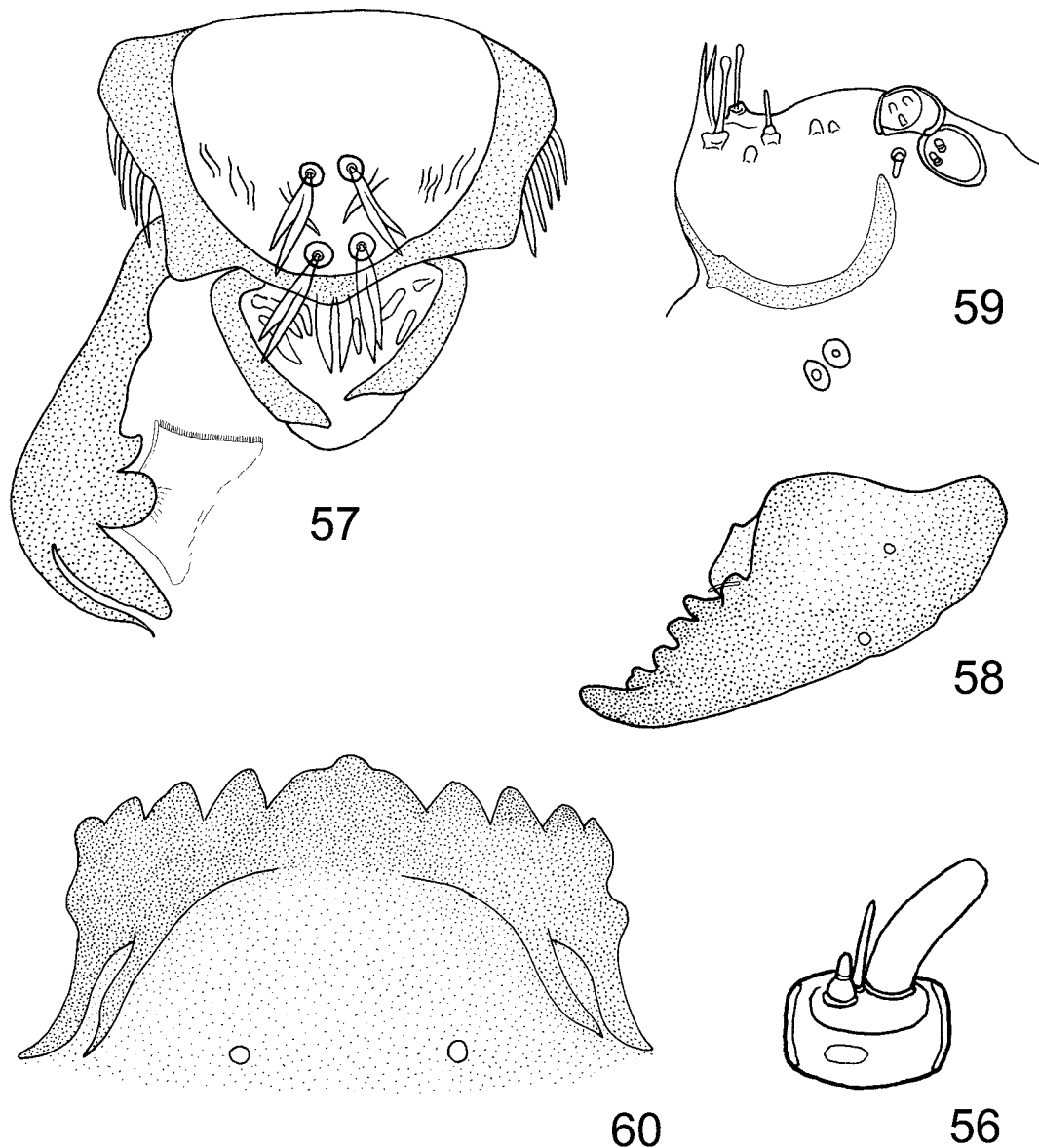
Head. Antenna as in Figure 56. Length of antennal segments (in μm): 9–10, 5.5–6.5, 2.0–2.5, 2.0. AR 0.91–0.92. Basal antennal segment 15.5–18.0 μm wide; blade 13.5–14.5 μm long; accessory blade 5.5–6.5 μm long. Sensilla basiconica 3.5 μm long. Subapical style of second segment 5.0–5.5 μm long. Labrum and epipharyngeal area as in Figure 57. Premandible 71–82, 76 μm long. Mandible (Fig. 58) 126–137, 131 μm long; with 4 inner teeth; seta subdentalis 2.0–2.5 (2) μm long; seta interna apparently absent. Maxilla as in Figure 59. Mentum (Fig. 60) with median tooth 27–34, 31 μm wide, with 4 pairs of lateral teeth; ventromental plate 9.0 (2) μm wide on flattened mentum. Postmentum 112–118, 114 μm long.

Abdomen. Anterior parapods about 91 μm long, not fully fused, each with about 50 longer claws. Posterior parapods each with at least 7 claws, lengths more than 34 μm .

Remarks. This larva resembles the Holarctic *P. oxoniana* (Edwards, 1922) in having a mandible with 4 inner teeth, a mentum with 4 pairs of lateral teeth, an antennal blade subequal in length to the width of the basal antennal segment, and posterior parapods with 7–9 claws. It is, however, much larger with a postmentum length of 112–118 μm as opposed to 73–79 μm . It could belong to the new genus to be described by Ferriington and Sæther (in manuscript) or to *Allocladius*.



FIGURES 52–55. *Allocladius* sp. "Chile", male pupa. **52**—frontal apotome; **53**—thorax; **54**—tergites; **55**—sternites.



FIGURES 56–60. *Allocladius* sp. "Falkland Island", larva. **56**—antenna; **57**—labro-epipharyngeal region; **58**—mandible; **59**—maxilla; **60**—mentum.

Pseudosmittia Edwards

Pseudosmittia Goetghebuer, 1932: 126 (as subgenus of *Smittia* Holmgren, 1869: 47), *nomen nudum*. A type species was not designated in the original work contrary to Article 13b of the Zoological Code.

Pseudosmittia Edwards, 1932: 141, *pro parte*. Edwards described the genus by inference (ICZN Article 13a (ii) and designated an eligible type species. Following ICZN Article 50a, *Pseudosmittia* must be credited to Edwards (1932). See Spies and Reiss (1996) and Spies and Sæther (2004).

Pseudosmittia Edwards; Ferrington and Sæther (in manuscript).

Orthosmittia Goetghebuer, 1943: 110 in Goetghebuer (1940–50) (as subgenus of *Smittia* Holmgren, 1869: 47).

Orthosmittia has mistakenly been synonymized with *Smittia* both by Freeman (1956: 346) and Sæther (1981: 25).

Syn. n.

Ancylocladius Sublette & Wirth, 1972: 5. **Syn. n.**

Type species. *Spaniotoma* (*Smittia*) *angusta* Edwards, 1929, by subsequent designation of Edwards (1932: 141).

Diagnostic characters. The imagines are separable from other Orthoclaadiinae with bare eyes, wings and squama, by having 2 short, biserial acrostichals on mid-scutum without additional tubercle, hump or microtrichial tuft; non-extended, non-protruding eyes; costa not to moderately long extended; VR high to extremely high; Cu_1 sinuate, curved or straight; wing often with additional vein caused by bifurcation of postcubitus. Male anal point absent or placed forward on tergite IX with microtrichia often reaching to apex; single, plate- or spine-like, median virga; male gonostylus not double but occasionally furcate. Female genitalia with gonocoxite IX long and low with characteristic sclerotized margin against tergite IX, small dorsomedian lobe, large ventrolateral lobe, and spermathecal duct with loop.

The pupae can be separated from other orthoclads by lacking a thoracic horn and a precorneal tubercle, having a reduced or smoothly rounded anal lobe without or with fine hair-like setae; three precorneals and two median anteprenotals all fine and hair-like, and usually conjunctives both dorsally and ventrally armed with spinules.

The larvae are separable from all other orthoclads except *Camptocladius* van der Wulp, *Allocladius* and a new genus (Ferrington & Sæther in manuscript) by having broad, bifid S I and S II, reduced antenna and no proceri. They differ from *Camptocladius* by having premandible with brush, and reduced to relatively well developed posterior parapods, usually with claws. From *Allocladius* and the new genus they differ by having the antennal blade extending beyond flagellum about 2–4 times as long as width of basal segment and posterior parapods with 0–6 claws, except in *P. mathildae* Albu with 8 claws.

Species groups

The genus is very heterogeneous in the imaginal stages. Several species thus have to be regarded as only tentatively placed. However, the immatures are much more homogeneous and if only few pupae and larvae are known at least some are known for most of the apparent groups. The groupings used here are only preliminary as a worldwide revision of the genus is in progress (Ferrington & Sæther in manuscript).

The typical *Pseudosmittia* with digitiform superior volsella, usually presence of single or double median volsella and inferior volsella with accessory lobe are well represented in the Neotropical region (see Fig. 61 for nomenclature on the different volsellae). There is some doubt about the homology of the different volsellae. A few species appear to have a lobe-like median volsella and no superior volsella as for instance in *P. lamasi* sp. n. (Fig 135). However, we here regard the anteriormost volsella as the superior volsella and that no species can have a median volsella without also having a superior volsella. According to Ferrington and Sæther (in manuscript) they all belong in the monophyletic *angusta* group. In the Neotropical region this group is composed of *P. adunca* sp. n., *P. cambuciensis* sp. n., *P. catarinense* sp. n., *P. forcipata* Goetghebuer, *P. gibbistyla* sp. n., *P. invirgata* sp. n., *P. magdae* sp. n., *P. roquei* sp. n., *P. umbonata* sp. n., *P. uncata* sp. n. and *P. lamasi* sp. n. Outside of the Neotropical region only *P. mathildae* Albu has a bilobed gonostylus, but that species belongs to a different group since it lacks a superior volsella.

Pseudosmittia carioca sp. n., *P. lamellata* sp. n., *P. palpina* sp. n. and *P. tropis* sp. n. all share a somewhat reduced palp (palpomeres 2–5 subequal in size), apical triangular crista dorsalis, well developed anal point posterior on tergite IX, R_{4+5} ending proximal to Cu_1 and one single volsella adpressed to gonocoxite and can be placed in a separate group, the *brevifurcata* group. This group is confirmed by Ferrington and Sæther (in manuscript).

Pseudosmittia nana sp. n., *P. paulista* sp. n. and *P. pinhoi* sp. n. can be grouped based on palpomeres normal, R_{4+5} ending distal to Cu_1 , postcubital fork absent, wing cuneiform, gonostylus robust and without crista dorsalis. The close relationship of these species essentially is confirmed in Ferrington and Sæther (in manuscript).

The presence of a postcubital fork and a well developed anal lobe appear to join the otherwise dissimilar *P. digitata* Sæther and *P. joaquimvenancioi* (Messias et Oliveira) with *P. brachydicrana* (Edwards). The somewhat similar *P. windwardensis* (Sæther) could be placed in the same group. However, although *P. digitata* and *P. joaquimvenancioi* are closely related the other species are not.

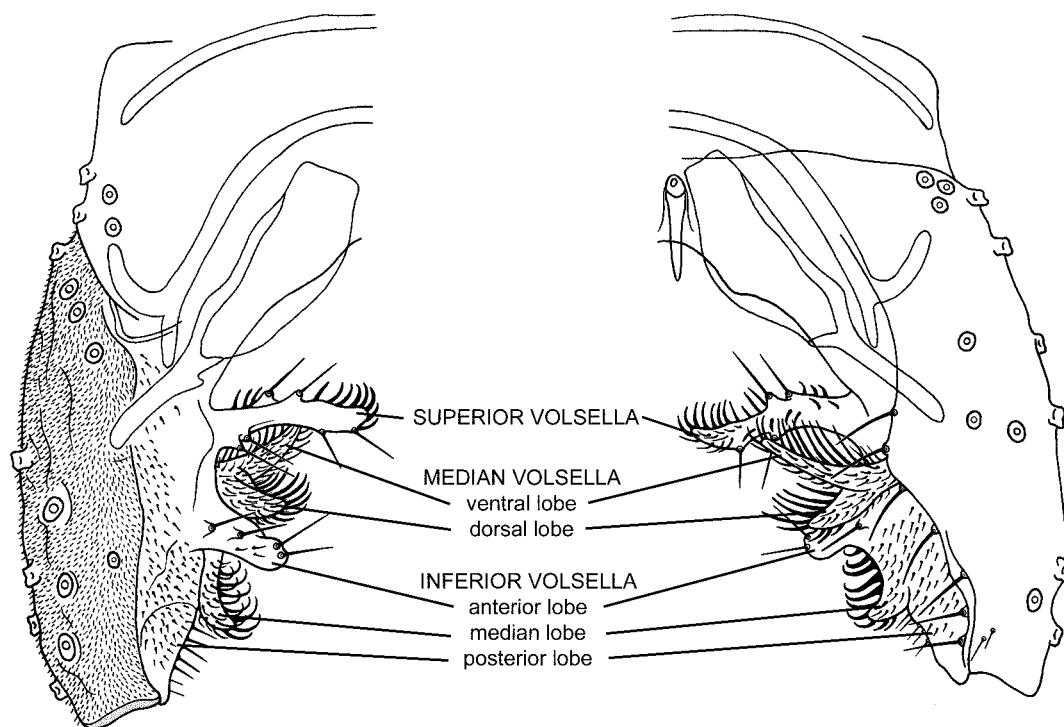


FIGURE 61. *Pseudosmittia roquei* sp. n., male. Hypopygium with anal point and tergite IX removed showing superior, median, and inferior volsellae, dorsal aspect to the left, ventral aspect to the right.

Pseudosmittia amorimi sp. n. can not be readily placed in any of the above mentioned groups and belongs to a separate group.

Key to the males of Neotropical *Pseudosmittia* Edwards

1. Inferior volsella placed close to apex of gonocoxite, sharply triangular with flap-like accessory lobe underneath; gonostylus attenuate; anal point absent or represented by fold; postcubital fork present (Figs 77–79).....
..... *P. brachydicrana* (Edwards)
- Inferior volsella not placed close to apex of gonocoxite; gonostylus less attenuate; anal point present or absent; postcubital fork present or absent..... 2
2. Anal point hyaline; region between inferior and superior volsellae sclerotized along inner margin (Figs 134–135)....
..... *P. lamasi* sp. n.
- Anal point present or absent, when present, microtrichiose; region between inferior and superior volsellae never sclerotized along inner margin..... 3
3. Superior volsella absent or consisting of basal swelling of inner margin of gonocoxite; inferior volsella bulge-like to long and curved; median volsella absent; anal point well developed..... 4
- Superior volsella digitiform, inferior volsella variable, but not bulge-like; median volsella present, often divided; anal point absent to well developed..... 14
4. Palp reduced with palpomeres 2–5 subequal in length..... 5
- Palpomeres not reduced..... 6
5. Transverse sternapodeme un-sclerotized; crista dorsalis well developed, apical; costa not extended; R_{4+5} ending proximal to the apex of Cu_1 (Figs 157–159)..... *P. palpina* sp. n.
- Transverse sternapodeme sclerotized; crista dorsalis not evident; costal extension 68–94 μ m long; R_{4+5} ending distal to the apex of Cu_1 (Figs 71–73)..... *P. amorimi* sp. n.
6. R_{4+5} ending distal to M_{3+4} ; penis cavity sclerotized (Figs 163–165)..... *P. paulista* sp. n.

- R_{4+5} ending proximal to M_{3+4} ; penis cavity generally not sclerotized (except for *P. windwardensis* from which it can be differentiated as the costa is extended in the latter) 7
- 7. Virga with lateral lamellae; inferior volsella weak, adpressed; superior volsella with strong orally directed microtrichia 8
 - Virga without lateral lamellae; inferior volsella well developed; superior volsella absent or without conspicuously strong microtrichia 9
- 8. Gonostylus without outer corner (Fig. 140)..... *P. lamellata* sp. n.
 - Gonostylus with pronounced outer corner (Figs 185–187) *P. tropis* sp. n.
- 9. Virga strong, composed of two strong spines, longer than half the length of phallapodeme; postcubital fork absent; R_{4+5} ending proximal to apex of Cu_1 (Figs 91–93)..... *P. carioca* sp. n.
 - Virga strong or weak, generally shorter than half the length of phallapodeme, when longer, postcubital fork present; R_{4+5} ending distal or opposite to apex of Cu_1 10
- 10. Postcubital fork absent; anal point absent or barely indicated 11
 - Postcubital fork present; anal point well developed 13
- 11. Virga consisting of a single plate-like spine (Fig. 153) *P. nana* sp. n.
 - Virga consisting of two distinct spines..... 12
- 12. Inferior volsellae posterior on gonocoxite (Figs 205–206)..... *P. windwardensis* (Sæther)
 - Inferior volsellae not posterior on gonocoxite (Figs 171–172)..... *P. pinhoi* sp. n.
- 13. Third palpomere with apical projection and 7–13 sensilla clavata (Fig. 126).....
 - *P. joaquimvenancioi* (Messias *et* Oliveira)
 - Third palpomere without apical projection, with 2–3 sensilla clavata (Fig. 101) *P. digitata* Sæther
- 14. Gonostylus distinctly bilobed..... 15
 - Gonostylus simple or if bilobed, secondary lobe adpressed to gonostylus 19
- 15. Secondary lobe of gonostylus much shorter than main lobe, not hook-like; anal point absent. 16
 - Secondary lobe of gonostylus about as long as or longer than main lobe; anal point present..... 18
- 16. Median volsellae with single lobe (Figs 98–99) *P. catarinense* sp. n.
 - Median volsellae double, sometimes with ventral lobe partly covered by dorsal lobe 17
- 17. Median volsellae double with the two lobes well separated (Figs 178–179) *P. roquei* sp. n.
 - Median volsellae double with ventral lobe partly covered by dorsal lobe (Figs 84–86).....
 - *P. cambuciensis* sp. n.
- 18. Secondary lobe of gonostylus much longer than main lobe (Fig. 66) *P. adunca* sp. n.
 - Secondary lobe of gonostylus about as long as main lobe (Fig. 199)..... *P. uncata* sp. n.
- 19. Secondary lobe of gonostylus consisting of an outer lateral hump with long microtrichia 20
 - Secondary lobe of gonostylus absent or when present adpressed to inner median side of gonostylus. 21
- 20. Median volsella apically bifid; inferior volsella with digitiform anterior lobe; anal point absent (Figs 116–117)
 - *P. gibbistyla* sp. n.
 - Median volsella simple; inferior volsella with broad, rounded anterior lobe; anal point present, but small (Figs 192–193) *P. umbonata* sp. n.
- 21. Median volsella nearly as long as superior volsella; superior volsella with basal anterior projection carrying 2–4 setae; gonostylus bilobed with secondary lobe adpressed to gonostylus (Figs 146–147). *P. magdae* sp. n.
 - Median volsella much shorter than superior volsella; superior volsella without basal anterior projection carrying setae, but often with setae variably placed on projections; gonostylus simple or when bilobed secondary lobe indistinct and adpressed to gonostylus 22
- 22. Virga absent or not sclerotized; median volsella broadly rounded to subquadrangular (Figs 123–124).....
 - *P. invirgata* sp. n.
 - Virga present; median volsella subtriangular, shorter than wide (Figs 110–111). *P. forcipata* (Goetghebuer)

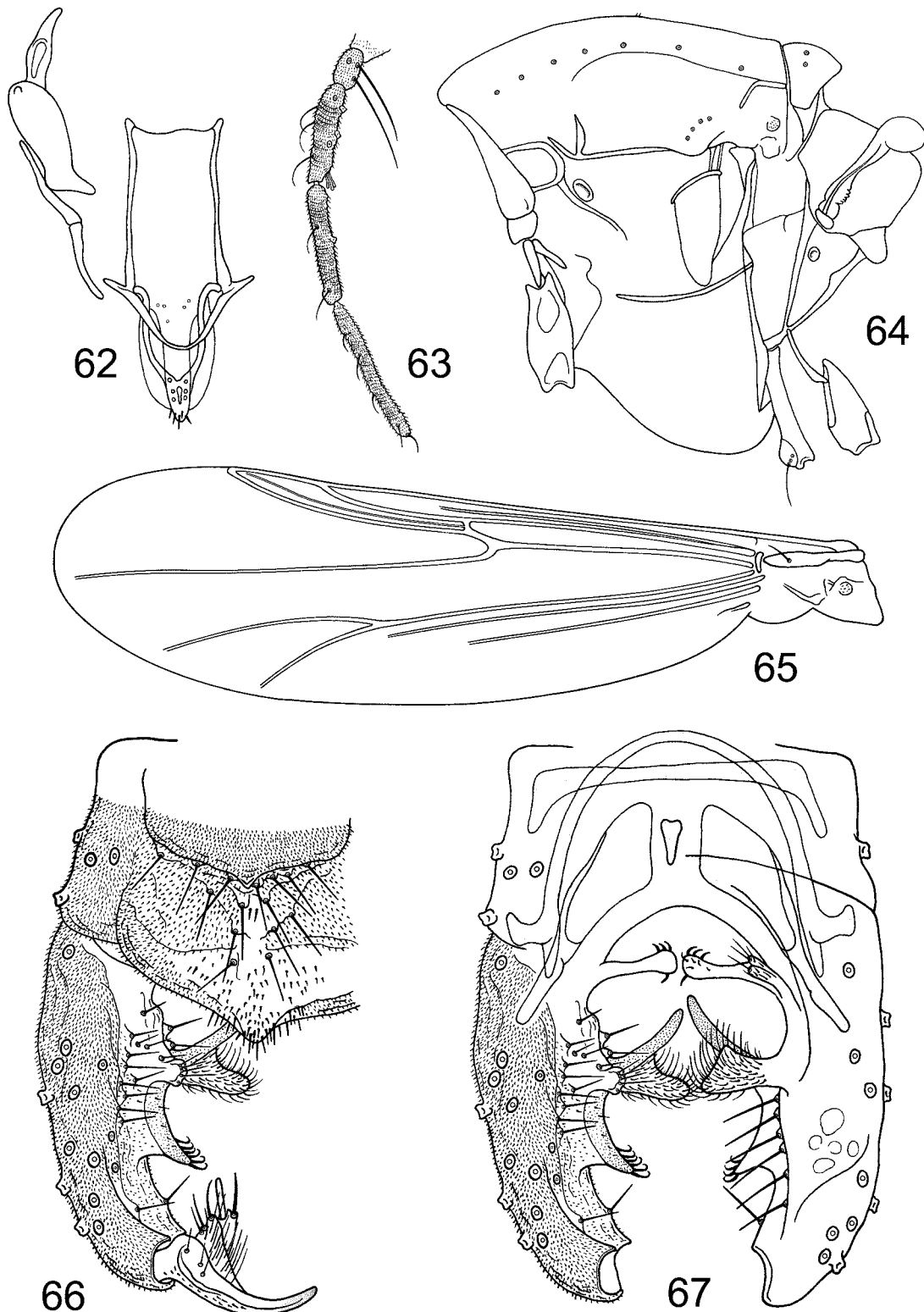
***Pseudosmittia adunca* sp. n.**
(Figs 62–67)

Type material. Holotype male, **BRAZIL: Santa Catarina State**, Jaraguá do Sul, 14.v.–02.viii.2003, emergence trap (soil), A.P. Dias *et al.* (MZUSP). Paratype: 1 male, Santa Catarina State, São Bento do Sul, 26°19'25.6"S, 48°18'26.5"W, 660 m a.s.l., 13–16.x.2001, Malaise trap, A.P. Dias *et al.* (ZMBN).

Diagnostic characters. The male can be separated from other species with bifurcate gonostylus by the long, curved, tapering lobe of the gonostylus and the long, bare, dorsal lobe of the median volsella.

Etymology. From Latin, *aduncus*, bent inward, hooked, referring to the lobe on the gonostylus.

Male (n = 1–2). Total length 1.83 mm. Wing length 0.94–1.02 mm. Total length / wing length 1.79. Wing length / length of profemur 3.34–3.41.



FIGURES 62–67. *Pseudosmittia adunca* sp. n., male. 62—tentorium, stipes, and cibarial pump; 63—palp; 64—thorax; 65—wing; 66—hypopygium, dorsal aspect; 67—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Coloration. Fully brown.

Head. AR 0.84–0.98. Ultimate flagellomere 278–326 μm long. Temporal setae 6–8, consisting of 3–4 weak inner verticals, 2–3 strong outer verticals and 1 postorbital. Clypeus with 6–10 setae. Tentorium, stipes and cibarial pump as in Figure 62. Tentorium 79–94 μm long, 23 μm wide. Stipes 83–86 μm long, 30–38 μm wide. Palpomere (Fig. 63) lengths (in μm): 15–22, 26–40, 60–97, 108, 108. Third palpomere with 3–4 lanceolate sensilla clavata, 14–15 μm long.

Thorax (Fig. 64). Median anteprenotal lobes reduced; anteprenotum with 1 lateral seta. Dorsocentrals 7–9, acrostichals 2, prealars 4, supraalar absent. Scutellum with 6 setae.

Wing (Fig. 65). VR 1.40. Anal lobe weak. Costal extension 11–16 μm long. R_{4+5} ending distinctly proximal apex of M_{3+4} ; Cu_1 curved. Brachiolum with 1 seta, other veins bare.

Legs. Spur of fore tibia 38–45 μm long, spurs of mid tibia 25 μm and 11 μm long, of hind tibia 34–38 μm and 14–15 μm long. Width at apex of fore- and mid tibia 18–20 μm , of hind tibia 25–26 μm . Comb of 10–12 setae, longest 34 μm long, shortest 14 μm long. Length and proportions of legs as in Table 8.

TABLE 8. Length (in μm) and proportions of legs of *Pseudosmittia adunca* sp. n., male (n = 1–2).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
P ₁	278–306	321–360	162	65	50	29
P ₂	350–396	369–392	187	79	61	36
P ₃	350–385	373–407	198–212	95–101	95–101	38–40
	ta ₅	LR	BV	SV	BR	
P ₁	29	0.45	4.73	4.11	3.8	
P ₂	29	0.48	3.61	4.21	–	
P ₃	28–29	0.52–0.53	3.61–3.72	3.64–3.73	3.8–6.9	

Hypopygium (Figs 66–67). Anal point 7 μm long. Tergite IX with 16–17 setae. Laterosternite IX with 3–4 setae. Phallapodeme 69–75 μm long. Sternapodeme evenly rounded with no trace of oral projections, arched part about 39–48 μm long. Virga narrowly triangular, 14–20 μm long. Gonocoxite 121–136 μm long. Superior volsella 31–45 μm long, clubbed, with apical microtrichia and small tubercles with apical seta ventrally at base. Median volsella double; dorsal lobe strongly sclerotized, slender, curved, projecting anteriomedially, 33–45 μm long, bare; ventral lobe subtriangular, widest near apex, projecting posteriomedially, 28–30 μm long, fringed with strong microtrichia. Inferior volsella with hump-like, 9–11 μm high anterior lobe; median lobe 26–30 μm long, adpressed to gonostylus, with fringe of strong curved microtrichia in apical one-third. Gonostylus 26–27 μm long; basally with additional 43 μm long, curved lobe, tapering to strongly sclerotized apex; megaseta 7–11 μm long. HR 4.64–5.00. HV 6.78.

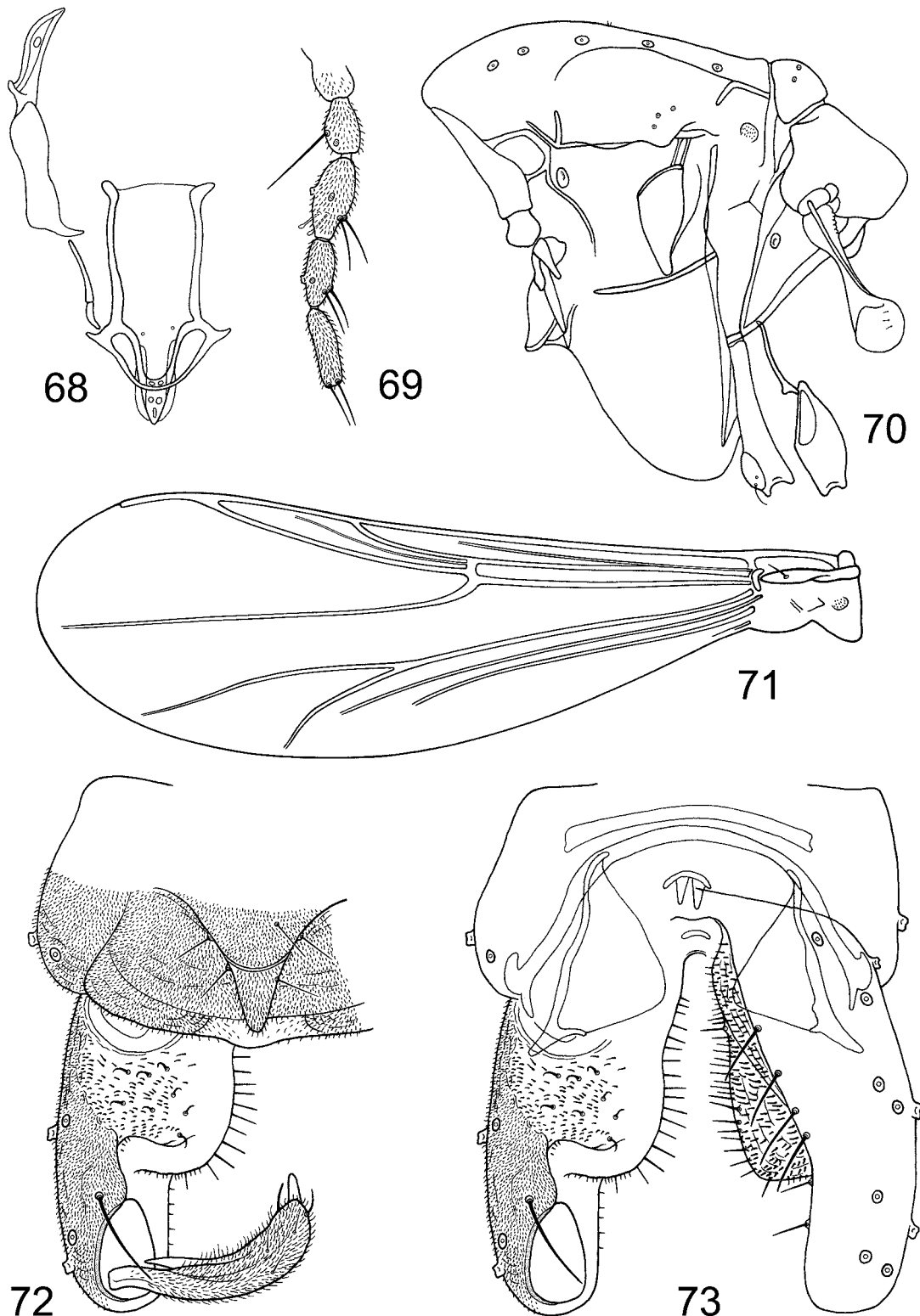
Distribution and biology. The species is known from two localities in northeastern Santa Catarina State in Brazil where it was collected at altitudes varying from sea level to above 600 m a.s.l. In Jaraguá do Sul it was taken in an emergence trap in a banana plantation; in São Bento do Sul it was collected in a Malaise trap in an area with fragmented Mata Atlântica forest.

Pseudosmittia amorimi sp. n.

(Figs 68–73)

Type material. Holotype male, **BRAZIL: Paraná State**, Parque Estadual do Pau Oco, Morretes, 25°34'27.9"S, 48°53'46.7"W, 10–13.iv.2002, Malaise trap (Bosque 2), M.T. Tavares *et al.* (BRPR29: BIOTA-FAPESP) (MZUSP). Paratypes: 1 male, same as holotype except (BRPR28: BIOTA-FAPESP) (MZUSP); 1 male, same

as holotype except (BRPR32: BIOTA-FAPESP) (ZMBN). 1 male, **São Paulo State**, Estação Ecológica Juréia-Itatins, Peruíbe, 24°31'06"S, 47°12'06"W, 6.v.2002, Malaise trap (Bosque 9), N.W. Perito *et al.* (PEJU13: BIOTA-FAPESP) (ZMBN).



FIGURES 68–73. *Pseudosmittia amorimi* sp. n., male. **68**—tentorium, stipes, and cibarial pump; **69**—palp; **70**—thorax; **71**—wing; **72**—anal point and tergite IX and dorsal aspect of left gonocoxite and gonostylus; **73**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Diagnostic characters. The species differs from other members of the genus except *P. palpina* sp. n. by having reduced palpomeres and sclerotized transverse sternapodeme. It can be separated from *P. palpina* sp. n. by having costal extension 68–94 μm long and R_{4+5} ending distal to apex of Cu_1 .

Etymology. Named after Dr. Dalton S. Amorim, head of the BIOTA-FAPESP project (03/12074–9), for making the material from the project available to us.

Male ($n = 3–4$, except when otherwise stated). Total length 1.07–1.20 mm. Wing length 0.70–0.83, 0.74 mm. Total length / wing length 1.44–1.61. Wing length / length of profemur 2.89–3.33, 3.01.

Coloration. Thorax and abdomen brown, legs pale brown.

Head. AR 0.28–0.44, 0.37, ultimate flagellomere 101–158, 125 μm long; one specimen with one antenna with 12 flagellomeres, AR 0.42, ultimate flagellomere 133 μm long. Temporal setae 4–6, 5; including 2–4, 3 inner verticals; 1–2, 2 outer verticals and 0–3, 1 postorbitals. Clypeus with 4–6, 5 setae. Tentorium, stipes and cibarial pump as in Figure 68. Tentorium 45–73, 60 μm long; 10–12, 11 μm wide. Stipes 57 (1) μm long, 23 (1) μm wide. Palpomere (Fig. 69) lengths (in μm): 12–15, 14; 15–18, 17; 28–30; 23–25; 30–33. Third palpomere with 3–4 lanceolate sensilla clavata, longest 11–14 μm long.

Thorax (Fig. 70). Median anteprenotal lobes reduced; anteprenotum with 0–2, 1 lateral seta. Dorsocentrals 3–7, 5; acrostichals 2; prealars 2–3, 3; supraalar absent. Scutellum with 4 setae.

Wing (Fig. 71). Wing cuneiform. Cu_1 curved. R_{4+5} ending far proximal to apex of M_{3+4} . VR 1.34–1.76, 1.50. Costal extension 68–94 μm long. Brachiolum with 1–2, 1 seta, other veins bare.

Legs. Spur of fore tibia 21–25, 23 μm long; spurs of mid tibia 14–23 (2) μm and 11–16 (2) μm long; of hind tibia 25–29 (2) μm and 14–16 μm long. Comb with 8–10 setae, longest 18–20 μm long, shortest 13–16 μm long. Width at apex of fore tibia 14–16, 15 μm ; of mid tibia 16 (2) μm ; of hind tibia 18–21 μm . Length and proportions of legs as in Table 9.

TABLE 9. Length (in μm) and proportions of legs of *Pseudosmittia amorimi* sp. n., male ($n = 1–3$).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
P ₁	252–270	310–328	–	–	–	–	–	–	–	–	–
P ₂	320–331	328–331	–	–	–	–	–	–	–	–	–
P ₃	292–310	302–328	151	79	79	25	18	0.46	3.91	4.21	3.6

Hypopygium (Fig. 72–73). Anal point bluntly triangular, 13–16, 14 μm long; 14 μm wide at base; with 4–11, 7 setae. Tergite IX with 0–2, 1 additional setae. Laterosternite IX with 0–2, 1 setae. Phallapodeme 45–54, 48 μm long. Transverse sternapodeme 47–50 μm long, without oral projections. Virga 3–6, 4 μm long; apparently without lateral lamellae. Gonocoxite 93–104, 100 μm long. Superior volsella low, rounded. Inferior volsella broadly rounded, 17–23, 20 μm wide, reaching to 0.66–0.74, 0.69 gonocoxite length. Gonostylus 48–52, 50 μm long, strongly curved; crista dorsalis apparently lacking; megaseta 4–6, 5 μm long. HR 1.78–2.19, 2.00. HV 2.14–2.34.

Distribution and biology. The species is known from two nature reserves in São Paulo and Paraná States in Brazil where it was collected in Malaise traps in areas with Mata Atlântica forest at altitudes varying from sea level up to about 600 m a.s.l.

***Pseudosmittia brachydicrana* (Edwards)**

(Figs 74–79)

Orthocladius brachydicranus Edwards, 1927: 243.

Pseudosmittia brachydicrana (Edwards); Cranston and Martin (1989: 262).

Smittia micronesiana Tokunaga, 1964: 526. **Syn. n.**

Pseudosmittia micronesia (Tokunaga), Cranston and Martin (1989: 262), error for *micronesiana*.

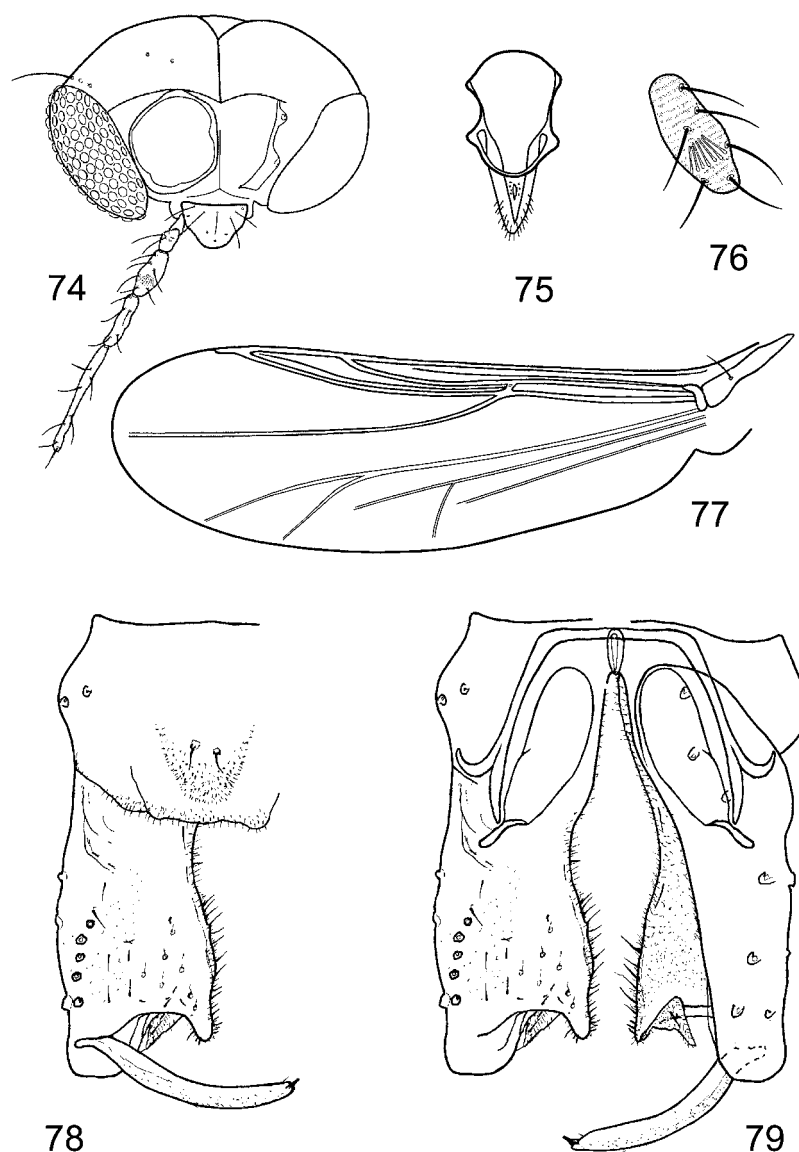
Ancylocladius relicinus Sublette *et* Wirth, 1972: 5. **Syn. n.**

Orthocladius (*Smittia*) *wirthi* Hardy, 1960: 145. **Syn. n.**

Not *Pseudosmittia setiforceps* (Tokunaga, 1964). Wrongly synonymized by Cranston and Martin (1989: 262).

Material examined. TAHITI: Papenoo, Min Churman, 13.v.1925, lectotype male, here designated, 46G, marked *Orthosmittia* (BMNH). JAMAICA: Runaway Bay, sweeping bay, shore wash, holotype of *Ancylocladius relicinus* Sublette *et* Wirth, 16–28.ii.1969, W.W. Wirth (USNM 71267).

Diagnostic characters. The presence of a far posteriorly placed inferior volsella combined with the presence of a cubital fork separates the species from other Neotropical species.



FIGURES 74–79. *Pseudosmittia brachydicrana* (Edwards, 1927), male. **74**—head; **75**—cibarial pump; **76**—third palpomere; **77**—wing; **78**—hypopygium, dorsal aspect; **79**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Description. The species will be described in detail in Ferrington and Sæther (in manuscript).

Distribution. In addition to Tahiti and Jamaica, the species is known from Diego Garcia, the Federation of Micronesia, Pelau, Marshall Islands, Chagos Archipelago and Hawaii.

***Pseudosmittia cambuciensis* sp. n.**

(Figs 80–87)

Type material. Holotype male, **BRAZIL: São Paulo State**, Cubatão, Cambuci, chuvosa (rainy season) 2002, F.O. Roque (MZUSP). Paratypes: 1 male, São Paulo State, Estação Biológica Boracéia, Salesópolis, Trilha dos Pilões, 23°39'08"S, 45°53'44.6"W, 2–5.iv.2001, Malaise trap (Bosque 4), S.T.P. Amarante *et al.* (BORA04: BIOTA FAPESP) (MZUSP); 1 male, as previous except 23°39'08.3"S, 45°53'48.9"W, Malaise trap (Bosque 5) (BORA08: BIOTA-FAPESP) (ZMBN). 2 males, **Paraná State**, Parque Estadual do Pau Oco, Morretes, 25°34'27.9"S, 48°53'46.7"W, 10–13.iv.2002, Malaise trap (Bosque 4), M.T. Tavares *et al.* (BRPR24: BIOTA-FAPESP) (ZMBN); 1 male, as previous except Malaise trap (Bosque 1) (BRPR27: BIOTA-FAPESP) (ZMBN); 1 male, as previous except Malaise trap (Bosque 2) (BRPR32: BIOTA-FAPESP) (ZMBN); 1 male, as previous except Malaise trap (Trilha 2) (BRPR34: BIOTA-FAPESP) (MZUSP).

Diagnostic characters. The male can be separated from other species with bifurcate gonostylus except *P. roquei* by the absence of an anal point and the presence of a bilobed median volsella. It differs from *P. roquei* by having the ventral lobe of the median volsella hidden by the dorsal lobe and thus difficult to distinguish, and by the longer gonostylus.

Etymology. Named after the type locality.

Male (n = 6–8, except when otherwise stated). Total length 1.23–1.49, 1.34 mm. Wing length 0.84–0.89, 0.87 mm. Total length / wing length 1.41–1.72, 1.54. Wing length / length of profemur 3.15–3.39 (3).

Coloration. Fully brown.

Head. AR 0.59–0.77, 0.72. Ultimate flagellomere 199–234, 220 µm long. Temporal setae 6–8, 7; consisting of 3–4, 3 inner verticals; 3–4, 3 outer verticals and 0–1, 0 postorbital. Clypeus with 6–10, 8 setae. Tentorium, stipes and cibarial pump as in Figure 80. Tentorium 84–98, 91 µm long; 14–20, 16 µm wide. Stipes 82–86, 84 µm long. Palpomere (Fig. 81) lengths (in µm): 11–25, 15; 23–43, 28; 39–61, 55; 63–108 (3); 86–154 (2). Third palpomere with 2–3, 2 lanceolate sensilla clavata; longest 9–15, 12 µm long.

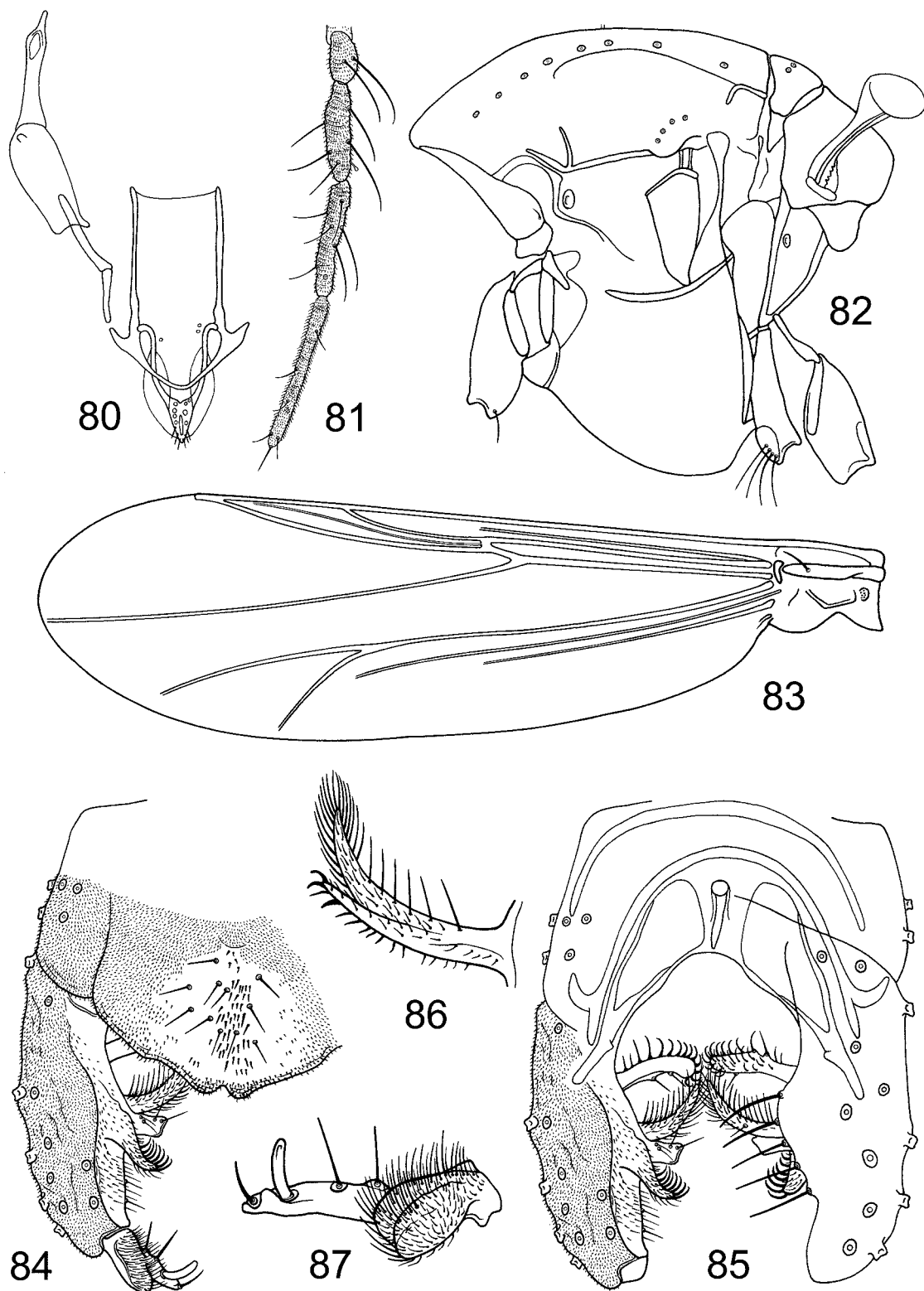
Thorax (Fig. 82). Median anteprenotal lobes reduced; anteprenotum with 1–2, 1 lateral seta. Dorsocentrals 8–10, 9; acrostichals 2; prealars 4; supraalar absent. Scutellum with 4–5, 4 setae.

Wing (Fig. 83). VR 1.50–1.61, 1.54. Anal lobe indicated. Costal extension 11–34, 21 µm long. R₄₊₅ ending above apex of M₃₊₄; Cu₁ nearly straight. Brachiolum with 1 seta, other veins bare.

Legs. Spur of fore tibia 32–39, 34 µm long; spurs of mid tibia 20–25, 22 (4) µm and 11–16, 13 µm long; of hind tibia 32–39, 34 µm and 14–18, 15 µm long. Width at apex of fore tibia 15–19, 17 (5) µm; of mid tibia 17–20, 18 (5) µm; of hind tibia 26–32, 28 µm. Comb with 11–12, 12 setae; longest 24–28, 26 µm long; shortest 15–17, 16 µm long. Length and proportions of legs as in Table 10.

TABLE 10. Length (in µm) and proportions of legs of *Pseudosmittia cambuciensis* sp. n., male (n = 1–3).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
P ₁	263–277	302–317	133–148	47–50	32–40	22–29
P ₂	349	324	162	79	54	25
P ₃	331	331	173	83	83	29
	ta ₅	LR	BV	SV	BR	
P ₁	18–22	0.43–0.49	5.08–6.11	3.83–4.37	2.8–4.3	
P ₂	25	0.50	4.55	4.16	4.4	
P ₃	22	0.52	3.89	3.83	4.8	



FIGURES 80–87. *Pseudosmittia cambuciensis* sp. n., male. **80**—tentorium, stipes, and cibarial pump; **81**—palp; **82**—thorax; **83**—wing; **84**—hypopygium, dorsal aspect; **85**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; **86**—median volsella, dorsal view; **87**—gonostylus.

Hypopygium (Fig. 84–87). Anal point lacking. Tergite IX with 11–16, 13 setae. Laterosternite IX with 4–7, 5 setae. Phallapodeme 68–73, 70 μm long. Sternapodeme evenly rounded with no trace of oral projections; arched part about 30–50, 41 μm long. Virga triangular, 16–20, 18 μm long. Gonocoxite 98–118, 104 μm long.

Superior volsella 32 μm long, digitiform with weakly clubbed apex, with anterior fringe of microtrichia. Median volsella double, both lobes projecting anteriomedially, ventral lobe to varying degree covered by dorsal lobe and might be difficult to discern; dorsal lobe curved, tapering, 34 μm long, subapically fringed with long microtrichia; ventral lobe narrow, tapering, 26 μm long, fringed with few curved microtrichia. Inferior volsella with subquadrangular, 17 μm long anterior lobe, with few weak dorsal setae; median lobe 15 μm long, weakly curved, tapering, with fringe of strong, orally curved microtrichia in apical half. Gonostylus 29–41, 36 μm long; basally with 24 μm long, broadly rounded lobe densely covered with long microtrichia; megaseta 7–9, 8 μm long. HR 2.61–3.54, 2.89. HV 3.02–4.49, 3.73.

Distribution and biology. The species is known from São Paulo and Paraná States in Brazil where it was collected in Malaise traps in areas with Mata Atlântica forest. In São Paulo it was taken on the eastern slopes of Serra Paraná Piacaba at altitudes varying from sea level up to about 800 m a.s.l. In Paraná it was collected in the nature reserve Parque Estadual do Pau Oco.

***Pseudosmittia carioca* sp. n.**

(Figs 88–93)

Type material. Holotype male, **BRAZIL: Rio de Janeiro State**, Reserva Biológica Tinguá, Nova Iguaçu, 22°34'28"S, 43°26'09"W, 5–8.iii.2002, Malaise trap (Trilha 5), S.T.P. Amarante *et al.* (BRTIN11: BIOTA-FAPESP) (MZUSP). Paratypes: 2 males, as holotype (ZMBN); 1 male, as holotype except 22°34'32"S, 43°26'07.6"W, 8–11.iii.2002, Malaise trap (Bosque 3), (BRTIN18: BIOTA-FAPESP) (ZMBN).

Diagnostic characters. The male imago can be separated from other Neotropical species of the genus by the combination of R_{4+5} ending proximal to Cu_1 , virga without lateral lamellae and composed of two spines longer than half the length of the phallapodeme.

Etymology. From Portuguese, *carioca*, meaning native from Rio de Janeiro and referring to where the material was collected. The name is to be treated as a noun in apposition.

Male ($n = 3-4$, except when otherwise stated). Total length 1.09 (1) mm. Wing length 0.63–0.70, 0.66 mm. Total length / wing length 1.73 (1). Wing length / length of profemur 2.92–3.09.

Coloration. Thorax and abdomen brown, legs pale brown.

Head. AR 0.63–0.84, 0.72; ultimate flagellomere 166–212, 187 μm long. Temporal setae 2–5, 4; including 1–2, 1 inner vertical and 1–3, 2 outer verticals. Clypeus with 6 setae. Tentorium, stipes and cibarial pump as in Figure 88. Tentorium 63–75, 68 μm long; 9–11, 10 μm wide. Stipes 50 (1) μm long. Palpomere (Fig. 89) lengths (in μm): 9–11, 10; 15–18, 16; 24–27, 25; 20–30, 25; 26–45, 33. Third palpomere with 2–5 lanceolate sensilla clavata, longest 10–15 μm long.

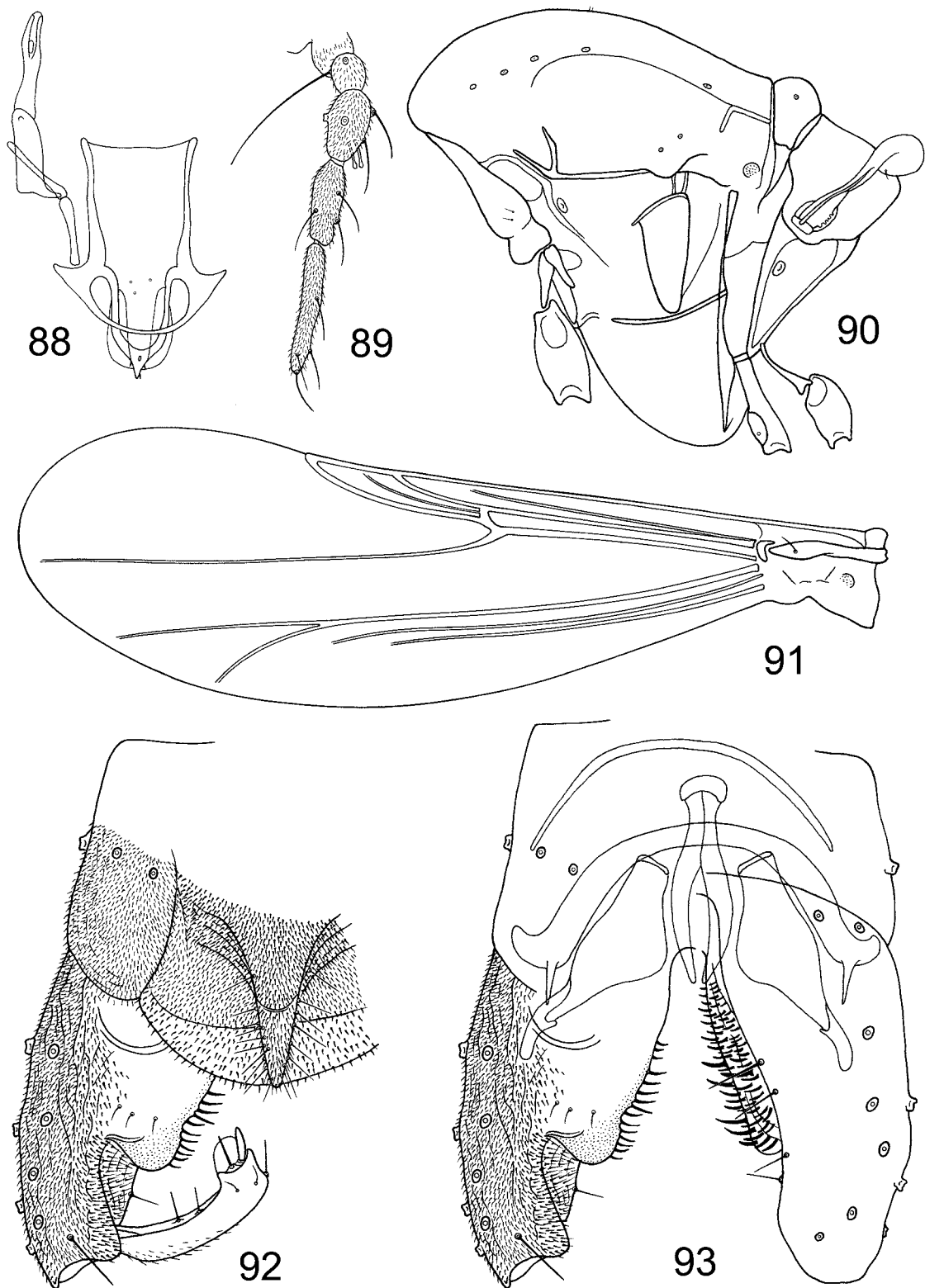
Thorax (Fig. 90). Median anteprenotal lobes reduced; anteprenotum with 2 lateral seta. Dorsocentrals 5–6, 5; acrostichals 2; prealars 2; supraalar absent. Scutellum with 2 setae.

Wing (Fig. 91). Wing cuneiform. Cu_1 curved. R_{4+5} ending far proximal to apex of Cu_1 . VR 1.68–1.81, 1.74. Costa not extended. Brachiolum with 1 seta, other veins bare.

Legs. Spur of fore tibia 24–27 (2) μm long; spurs of mid tibia 11–18 μm and 9 μm long; of hind tibia 25–29 μm and 11 μm long. Width at apex of fore tibia 14 μm ; of mid tibia 14–16, 15 μm ; of hind tibia 23 μm . Comb with 11–12 setae, longest 20–27 μm long, shortest 14–18 μm long. Length and proportions of legs as in Table 11.

TABLE 11. Length (in μm) and proportions of legs of *Pseudosmittia carioca* sp. n., male ($n = 1-3$).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
P ₁	221–248	223–256	–	–	–	–	–	–	–	–	–
P ₂	248–292	248–295	113	–	–	–	–	0.38	–	–	3.0
P ₃	241–277	270–302	–	–	–	–	–	–	–	–	–



FIGURES 88–93. *Pseudosmittia carioca* sp. n., male. **88**—tentorium, stipes, and cibarial pump; **89**—palp; **90**—thorax; **91**—wing; **92**—hypopygium, dorsal aspect; **93**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Hypopygium (Figs 92–93). Anal point triangular, 16 μ m long, 9–11 μ m wide at base, with 10–18 setae, no additional setae on tergite IX. Laterosternite IX with 2–3, 2 setae. Phallapodeme 50–52 μ m long. Sternapodeme evenly rounded with no trace of oral projections; arched part about 45–52 μ m long. Virga 34–45, 39 μ m long, apparently without lateral lamellae. Gonocoxite 88–98, 94 μ m long. Superior volsella barely indicated.

Inferior volsella broadly rounded, 14–17 μm wide, reaching to 0.64–0.72 gonocoxite length. Gonostylus 44–50, 46 μm long, curved with large, rounded apical crista dorsalis; megaseta 4–6 μm long. HR 1.95–2.15, 2.02. HV 2.34 (1).

Distribution and biology. The species is known only from Reserva Biológica Tinguá in the outskirts of Rio de Janeiro city, Brazil. This nature reserve is a mosaic of primary and secondary Mata Atlântica forest.

***Pseudosmittia catarinense* sp. n.**

(Figs 94–99)

Type material. Holotype male, **BRAZIL: Santa Catarina State**, Urubici, Morro da Igreja, 1.822 m a.s.l., 18.ix.–05.xii.2004, cloud forest, Malaise trap, L.E.M. Bizzo & L.C. Pinho (MZUSP).

Diagnostic characters. The male imago can be separated from other Neotropical species of the genus by the combination of gonostylus furcate with secondary lobe shorter than main lobe, anal point present and median volsella composed of a single branch.

Etymology. From Portuguese, *catarinense*, meaning native from Santa Catarina State and referring to the State where the material was collected. The name is to be treated as a noun in apposition.

Male ($n = 1$). Total length 1.87 mm. Wing length 1.10 mm. Total length / wing length 1.69. Wing length / length of profemur 3.43.

Coloration. Thorax and abdomen brown, legs pale brown.

Head. AR 1.07, ultimate flagellomere 338 μm long. Temporal setae composed of at least 2 inner verticals. Clypeus with 6 setae. Tentorium, stipes and cibarial pump as in Figure 94. Tentorium 107 μm long, 20 μm wide. Stipes 118 μm long. Palpomere (Fig. 95) lengths (in μm): 20, 36, 70, 82, 111. Third palpomere with 4 lanceolate sensilla clavata, longest 11 μm long.

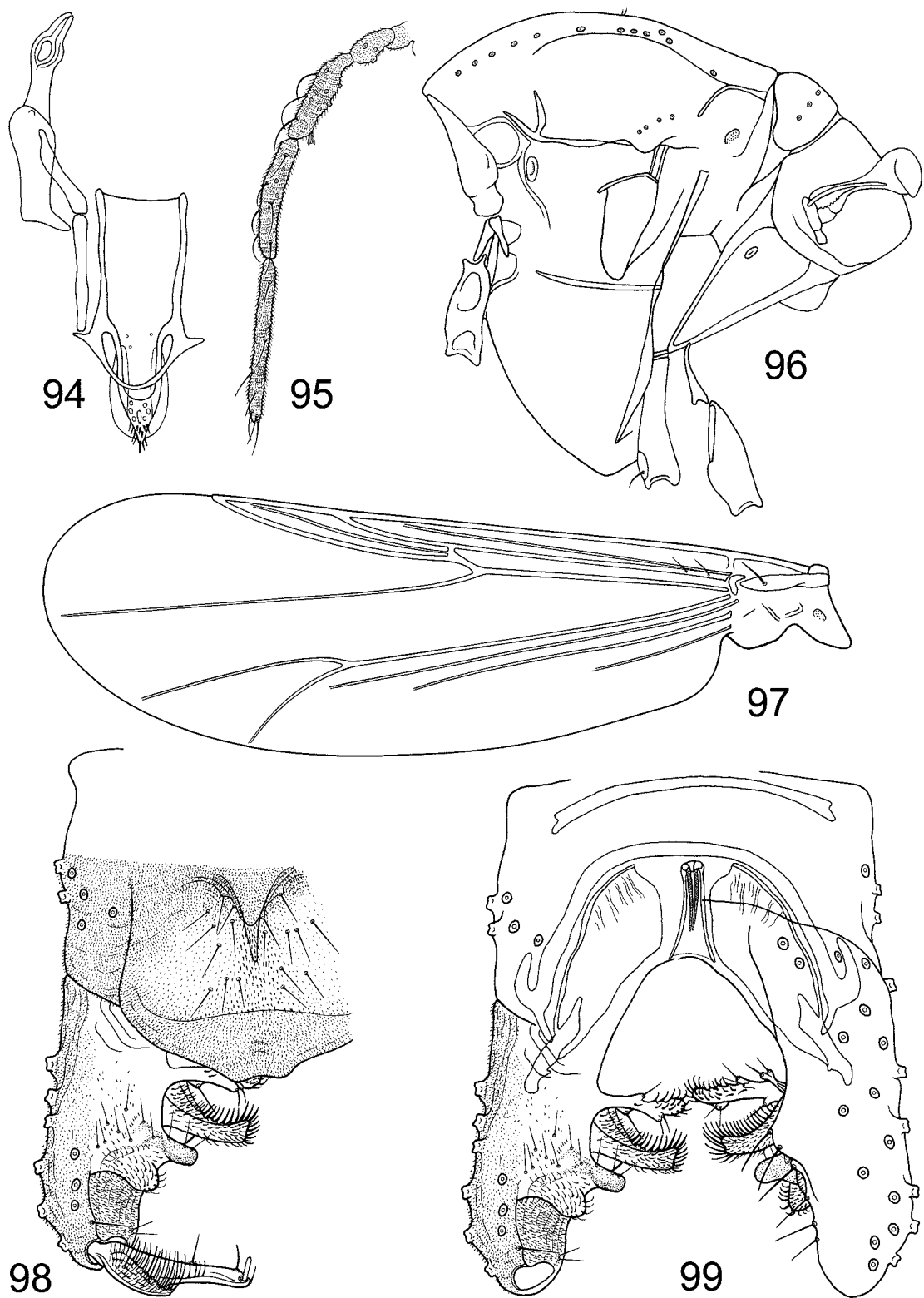
Thorax (Fig. 96). Median anteprenotal lobes reduced; anteprenotum with 1 lateral seta. Dorsocentrals 12, acrostichals 2, prealars 4, supraalar absent. Scutellum with 6 setae.

Wing (Fig. 97). Anal lobe well developed. Cu_1 curved. R_{4+5} ending distal to apex of Cu_1 . VR 1.57. Costal extension 16 μm long. Brachiolum with 1 seta, R with 2 setae, remaining veins bare.

Legs. Spur of fore tibia 41 μm long, spurs of mid tibia 25 μm and 16 μm long, of hind tibia 39 μm and 23 μm long. Width at apex of fore- and mid tibia 23 μm , of hind tibia 35 μm . Comb with 16 setae, longest 32 μm long, shortest 18 μm long. Fore femur 328 μm long, fore tibia 396 μm long; mid femur 418 μm long, mid tibia 421 μm long; hind femur 407 μm long, hind tibia 446 μm long; all tarsi lost.

Hypopygium (Figs 98–99). Anal point anterior on tergite IX, narrowly triangular, 16 μm long, 6 μm wide at base, with 3 setae. Tergite IX with 16 additional setae. Laterosternite IX with 7 setae. Phallapodeme 84 μm long. Sternapodeme without oral projections, arched part about 64 μm long. Virga with 2 strong 25 μm long spines and apparently 2 additional 37 μm long lateral spines. Gonocoxite 141 μm long. Superior volsella 35 μm long, digitiform with weakly clubbed apex, with microtrichia in apical half and small tubercles with apical seta basally and medially. Median volsella single, projecting medially, 33 μm long, weakly curved, subquad-rangular apically, covered with microtrichia and with fringe along apical and oral margin. Inferior volsella with bluntly digitiform, 15 μm long anterior lobe, with few weak setae; median lobe about 22 μm wide, rounded, with orally curved microtrichia. Gonostylus 62 μm long, basally with 32 μm long lateral lobe densely covered with long microtrichia; megaseta 7 μm long. HR 2.38. HV 3.17.

Distribution and biology. The species is known from a single specimen collected at an altitude of about 1.800 m a.s.l. in a fragmented primary cloud forest belonging to the Mata Atlântica forest in Santa Catarina State, Brazil. The specimen was taken in a Malaise trap close to a small stream.

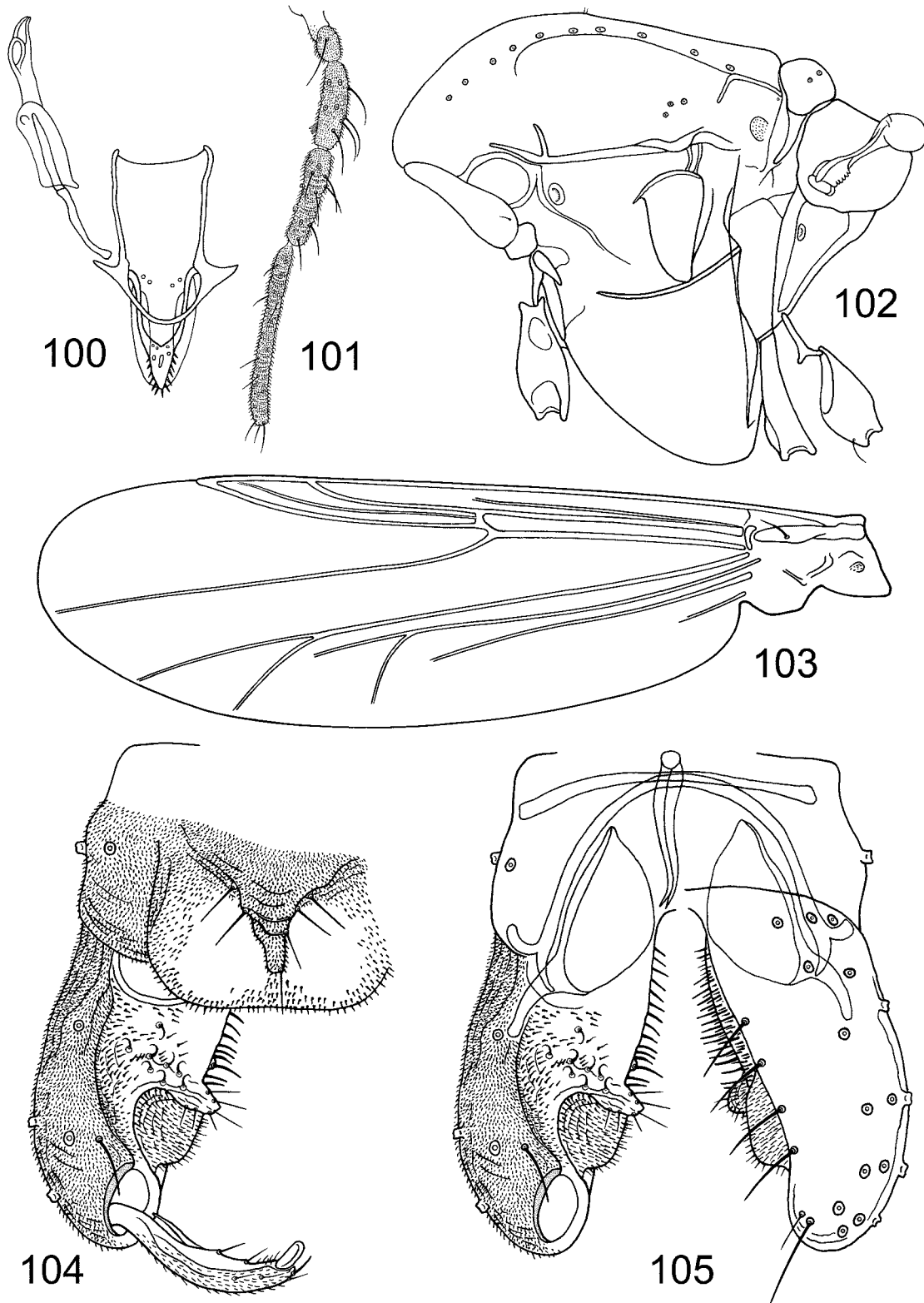


FIGURES 94–99. *Pseudosmittia catarinense* sp. n., male. 94—tentorium, stipes, and cibarial pump; 95—palp; 96—thorax; 97—wing; 98—hypopygium, dorsal aspect; 99—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Pseudosmittia digitata Sæther
(Figs 100–105)

Pseudosmittia digitata Sæther, 1981: 25, pro parte.

Pseudosmittia digitata Sæther; Cranston and Oliver (1988: 450), Pinho *et al.* (2009: 164).



FIGURES 100–105. *Pseudosmittia digitata* Sæther, 1981, male. **100**—tentorium, stipes, and cibarial pump; **101**—palp; **102**—thorax; **103**—wing; **104**—hypopygium, dorsal aspect; **105**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Material examined. SAINT LUCIA: Castries, lower slope of mountain behind Castries, holotype male and 5 paratype males, 9.i.1973 & xii.1972, Malaise trap, A.D. Harrison (ZMBN Type No. 32). **SAINT VINCENT:** Majorca, Yambou River, allotype female, viii.1972, Malaise trap, A.D. Harrison; Golden Grove Estate, Yambou River, paratype male, vii.1972, Malaise trap, A.D. Harrison. **BRAZIL: Santa Catarina State,** Urubici, Morro da Igreja, 1.822 m a.s.l., 2 males, 18.ix.–05.xii.2004, cloud forest, Malaise trap, L.C. Pinho & L.E.M. Bizzo (ZMBN). **São Paulo State,** Estação Ecológica Juréia-Itatins, Peruíbe, 24°31'06"S, 47°12'06"W, 1 male, 6.v.2002, Malaise trap (Bosque 8), N.W. Perioto *et al.* (PEJU09: BIOTA-FAPESP) (ZMBN). **Bahia State,** Estação Ecológica Pau Brasil, Porto Seguro, 16°23'17.6"S, 39°10'55.6"W, 17.v.2002, 107 m a.s.l., Malaise trap (Trilha 1), C.O. Azevedo *et al.* (BRPS10: BIOTA-FAPESP) (ZMBN). **SURINAM:** Paramaribo, 1 male, 15–24.viii.1969, N. Nieser (ZSM).

Diagnostic characters. The male imago differs from the other members of the group by having a well developed inferior volsella, as in *P. joaquimvenancioi*, but also by lacking an apical elongation of the third palpomere. The female has tergite IX undivided and dark, circular seminal capsules as in *P. joaquimvenancioi*, but is also separable by the lack of a projection on the third palpomere.

Description. The species will be redescribed in detail by Ferrington and Sæther (in manuscript).

Distribution and biology. In the Neotropical Region the species is recorded from Brazil and Surinam and from Saint Lucia and Saint Vincent in the Caribbean. In addition the species is known from Florida, Georgia, South Carolina, Missouri, Kansas, Michigan, South Dakota, New Mexico and California in the U.S.A. and from Ontario and Manitoba in Canada.

In Brazil it was collected at about 1.800 m a.s.l. in a fragmented primary cloud forest belonging to the Mata Atlântica forest in Santa Catarina State and in two nature reserves in São Paulo and Bahia States. Both localities in São Paulo and Bahia are lowland areas along the Brazilian coastline.

The unknown larva probably lives in wet sand areas near rivers, lakes or the sea shore and probably tolerates high salinity.

Pseudosmittia forcipata (Goetghebuer)

(Figs 106–111)

Camptocladius forcipatus Goetghebuer, 1921: 87.

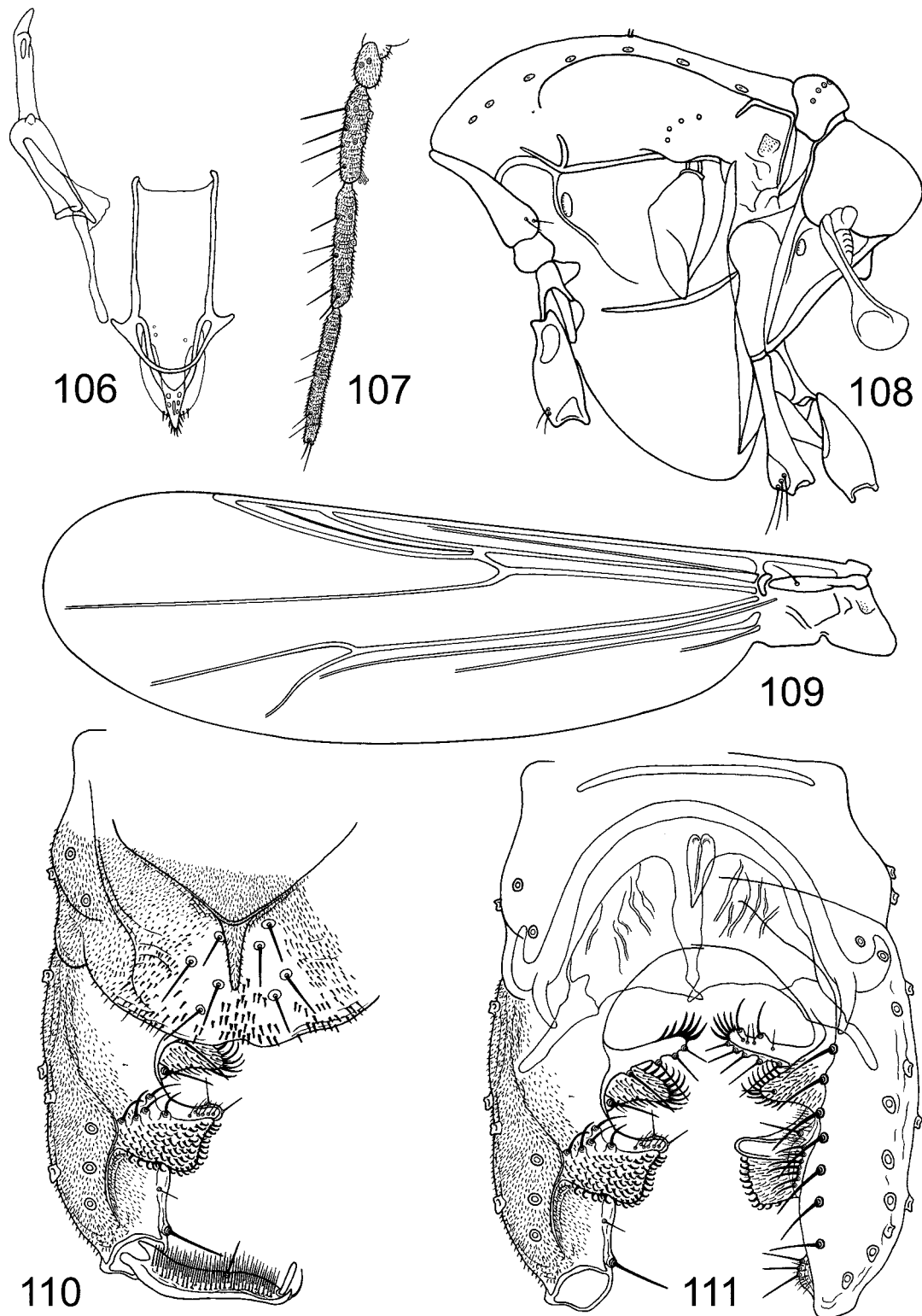
Smittia triappendiculata Goetghebuer, 1931: 216.

Pseudosmittia antillaria Sæther, 1981: 29. **Syn. n.**

Smittia (*Pseudosmittia*) *forcipata* Goetghebuer 1943: 106 in Goetghebuer (1940–50).

Pseudosmittia forcipata (Goetghebuer); Langton and Pider (2007: 136), Cranston and Oliver (1988: 450), Pinho *et al.* (2009: 164).

Material examined. BELGIUM: Destelbergen, holotype male, 31.x.1916, M. Goetghebuer (IRSN); 1 male, 1 female paratypes, as holotype (IRSN). **SAINT VINCENT:** Majorca Estate, SVT 218B, 1 male, viii.1972, A.D. Harrison, holotype male of *Pseudosmittia antillaria* (ZMBN Type No. 33); 3 male paratypes, same as holotype (ZMBN). **BRAZIL: Santa Catarina State,** São Bento do Sul, 3 Trilha Rugendas, 26°19'25.6"S, 48°18'26.5"W, 660 m a.s.l., 1 male, 13–16.x.2001, Malaise trap, M.V. Yamada; São Bento do Sul, 5 Trilha Rugendas, 26°19'25.6"S, 48°18'26.5"W, 660 m a.s.l., 3 males, 13–16.x.2001, Malaise trap, M.V. Yamada (ZMBN). **Rio de Janeiro State,** Itatiaia, Penedo-Gramado entorno do Lago da Pousada do Lago, 3 males, 16.vi.1963, L.R. Silva-da-Silva & S.J. Oliveira (ZMBN). **Amazonas State,** Rio Marauá, outlet from mountains (upper Rio Negro), A504, 1 male, 29.i.1963, drift, E.J. Fittkau (ZSM). **Pará State,** Rio Pará do Oeste, Oberland, Mission Tiriyo, A356–1, 1 male, 22–23.vii.1962, drift, E.J. Fittkau (ZSM). **PERU: Huanuco Region,** Mouth of Río Azul in Río Tullumayo, 1 male, 21.v.1963, E.J. Fittkau (ZSM). **ECUADOR: Napo Province,** Baeza, Quijos, 2.200 m a.s.l., 11 males, 21.i.1997, J. Skartveit (ZMBN). **VENEZUELA: Falcón State,** Sierra de San Luis, 11°11.750'N, 69°41.454'W, 1.371 m a.s.l., 1 male, 8–9.vi.2001, Malaise trap, R.W. Holzenthal *et al.*; Río Mitare near San Luis, 11°07.930'N, 69°39.184'W, 589 m a.s.l., 4 males, 07.vi.2001, R.W. Holzenthal *et al.* (ZMBN). **Aragua State,** Parque Nacional Henri Pittier, Rancho Grande, 10°21.047'N,



FIGURES 106–111. *Pseudosmittia forcipata* (Goetghebuer, 1921), male. **106**—tentorium, stipes, and cibarial pump; **107**—palp; **108**—thorax; **109**—wing; **110**—hypopygium, dorsal aspect; **111**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

67°41.198'W, about 1.000 m a.s.l., 3 males, 16–18.ix.1999, rainforest, hand net / light trap, T. Andersen (ZMBN). **COLOMBIA: Antioquia State**, near Medellín, 1.700 m a.s.l., 1 male, 28.iv.1983, M. Wolf (ZSM). **COSTA RICA: Guanacaste Province**, Guanacaste Conservation Area, Cerro Cacao, Río San Josecito, 1.000 m a.s.l., 10 males, 3–7.v.1993, Malaise trap, T. Andersen (ZMBN). **Heredia Province**, La Selva Biological Station, 5 males, 03.iv.1993, Malaise trap, O.A. Sæther (ZMBN). **MEXICO: Campeche State**, Calakmul Bios-

phere Reserve, Aguada pequeña, 1 km Northeast of Hormiguero, 18°24'10.9"N, 89°29'13.8"W, 300 m a.s.l., 4 males, 6–7.v.1997, Malaise trap, A. Contreras-Ramos *et al.* (ZMBN). **Nuevo León State**, Santiago, 30 km West of Cola de Caballo on road to Laguna de Sánchez, small stream with silt, 14 males, 19.ix.1998, hand net, T. Andersen & A. Contreras-Ramos (ZMBN).

Diagnostic characters. The male imago can be separated from other species with divided superior volsella by the shape of the accessory lobe of the inferior volsella, AR of 0.74–1.48, an anal point length of 11–48 µm and a clearly sinuate Cu₁. The female can be distinguished from other females with tergite IX divided by broad caudal notch and slight caudal projection of gonocoxites by lacking a strong apical seta on the antenna. The pupa has uneven shagreen spinules on tergal conjunctives III/IV, VI/VII and sternal conjunctives IV/V–VII/VIII, no setae on anal segment, no nose on wing sheath, no stronger spinules or spines on anal segment, female genital sac without spinules, but tentatively associated male exuviae with basiventral but not apical spinules. The larva has a mandible with 3 inner teeth, posterior parapods with 5 claws and antennal blade 2–3 times as long as width of basal antennal segment.

Description. The species will be redescribed in detail by Ferrington and Sæther (in manuscript).

Distribution and biology. The species is widely distributed all over the Holarctic and Neotropical regions. In the Neotropical Region the species is recorded from Brazil, Colombia, Costa Rica, Ecuador, Mexico, Peru, Saint Vincent and Venezuela. In addition the species is known from Belgium, Germany, Norway, Thailand and China and all over Canada and U.S.A.

In Brazil it was collected in lowland areas with Amazon forest in the northern states of Pará and Amazonas at altitudes up to 660 m a.s.l.; in the southern states Rio de Janeiro and Santa Catarina it was taken in areas with Mata Atlântica forest. In Costa Rica it was taken in Malaise traps both in a tropical pre-montane wet forest at La Selva and in a cloud forest on the Cacao Volcano at about 1.000 m altitude.

Reared larvae from Georgia were from moist or saturated soils over lateral lines of a septic system in an urban lawn. It is likely that a larva of this species typically inhabits similar types of moist or saturated organically rich substrate.

***Pseudosmittia gibbistyla* sp. n.**

(Figs 112–118)

Type material. Holotype male, **BRAZIL: Santa Catarina State**, Urubici, Morro da Igreja, cloud forest, 1.822 m a.s.l., 18.v.2005, L.E.M. Bizzo & L.C. Pinho (MZUSP).

Diagnostic characters. The species differ from *P. umbonata* by having apically bifid median volsella, inferior volsella with digitiform projection, no anal point and a wing length of about 1.2 mm.

Etymology. From Latin, *gibbus*, hump-backed and Greek, *stylos*, column, referring to the secondary lobe of the gonostylus.

Male (n = 1). Total length not measurable. Wing length 1.23 mm. Wing length / length of profemur 3.35.

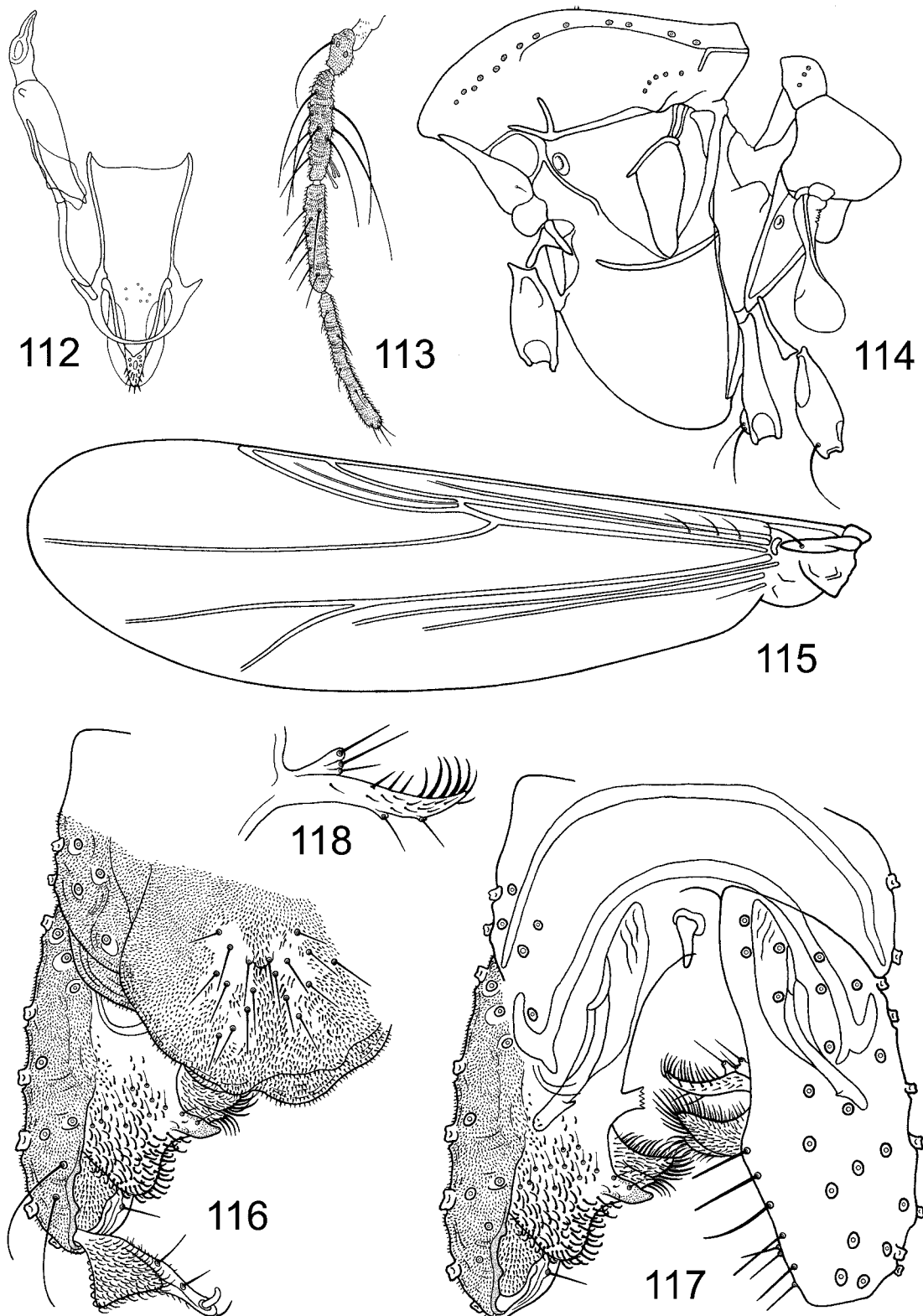
Coloration. Fully brown.

Head. AR 1.05. Ultimate flagellomere 368 µm long. Temporal setae apparently 4, consisting of 2 inner verticals and 2 outer verticals. Clypeus with 9 setae. Tentorium, stipes and cibarial pump as in Figure 112. Tentorium 109 µm long, 26 µm wide. Stipes 105 µm long, 26 µm wide. Palpomere (Fig. 113) lengths (in µm): 26, 38, 86, 83, 109. Third palpomere with 3 lanceolate sensilla clavata, longest 15 µm long.

Thorax (Fig. 114). Median anteprenotal lobes reduced; anteprenotum with 1 lateral seta. Dorsocentrals 13, acrostichals 2, prealars 5, supraalar absent. Scutellum with 6 setae.

Wing (Fig. 115). VR 1.49. Anal lobe indicated. No costal extension. R₄₊₅ ending above apex of Cu₁; Cu₁ weakly sinuate. Brachiolum with 1 seta, R with 3 setae, other veins bare.

Legs. Spur of fore tibia 38 µm long, spurs of mid tibia 23 µm and 15 µm long, of hind tibia 41 µm and 23 µm long. Width at apex of fore tibia 23 µm, of mid tibia 26 µm, of hind tibia 34 µm. Comb of 12 setae, longest 30 µm long, shortest 19 µm long. Length and proportions of legs as in Table 12.



FIGURES 112–118. *Pseudosmittia gibbistyla* sp. n., male. **112**—tentorium, stipes, and cibarial pump; **113**—palp; **114**—thorax; **115**—wing; **116**—hypopygium, dorsal aspect; **117**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; **118**—superior volsella, dorsal view.

Hypopygium (Figs 116–118). Anal point lacking. Tergite IX with 16 setae. Laterosternite IX with 6 setae. Phallapodeme 83 μ m long, apodeme lobe with 3–4 indistinct wrinkles. Sternapodeme evenly rounded with no

trace of oral projections, arched part about 52 μm long. Virga triangular, 19 μm long. Gonocoxite 145 μm long. Superior volsella 36 μm long, tapering, weakly curved anteriomedially, with anterior fringe of microtrichia in apical half, with 3 small tubercles with apical setae at base and 2 tubercles along posterior margin. Median volsella double, both lobes subtriangular with fringe of long microtrichia, dorsal lobe 26 μm long, ventral lobe 33 μm long. Inferior volsella with digitiform anterior lobe, 33 μm long, 26 μm wide at base, with 2 weak dorsal setae; with large, rounded median lobe with numerous orally curved microtrichia. Gonostylus 58 μm long; with triangular 38 μm long, 28 μm wide lateral lobe partly fused with gonostylus, covered with curved microtrichia; megaseta 9 μm long. HR 2.49.

TABLE 12. Length (in μm) and proportions of legs of *Pseudosmittia gibbistyla* sp. n., male (n = 1).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
P ₁	369	463	250	85	71	43	38	0.54	4.58	3.33	3.3
P ₂	477	496	241	113	85	47	38	0.49	4.28	4.04	4.8
P ₃	463	501	279	132	128	–	–	0.56	–	3.46	4.8

Distribution and biology. The single specimen was collected at an altitude of about 1.800 m a.s.l. in a fragmented primary cloud forest belonging to the Mata Atlântica forest in Santa Catarina State, Brazil. The specimen was taken in a Malaise trap close to a small stream.

***Pseudosmittia invirgata* sp. n.**

(Figs 119–124)

Type material. Holotype male, **MEXICO: Campeche State**, Calakmul Biosphere Reserve, Aguada pequeña, 1 km Northeast of Hormiguero, 18°24'10.9"N, 89°29'13.8"W, 300 m a.s.l., 6–7.v.1997, Malaise trap, A. Contreras-Ramos *et al.* (ZMBN Type No. 426). Paratypes: 30 males, as holotype; 2 males, Calakmul Biosphere Reserve, Ejido Nuevo Becan, El Choro, 18°35'25.5"N, 89°15'28.8"W, 130 m a.s.l., 30.iv.1997, Malaise trap, A. Contreras-Ramos *et al.* (MZUSP, ZMBN, ZSM).

Diagnostic characters. The absence of a virga and the broad median volsella will separate the male imago from *P. forcipata*.

Etymology. From Latin *in*, without, and *virgata*, with virga (twigs), referring to the lack of virga.

Male (n = 10–15, except when otherwise stated). Total length 1.08–1.19, 1.12 mm. Wing length 0.61–0.77, 0.73 (28) mm. Total length / wing length 1.47–1.65, 1.56. Wing length / length of profemur 2.62–3.00, 2.84 (22).

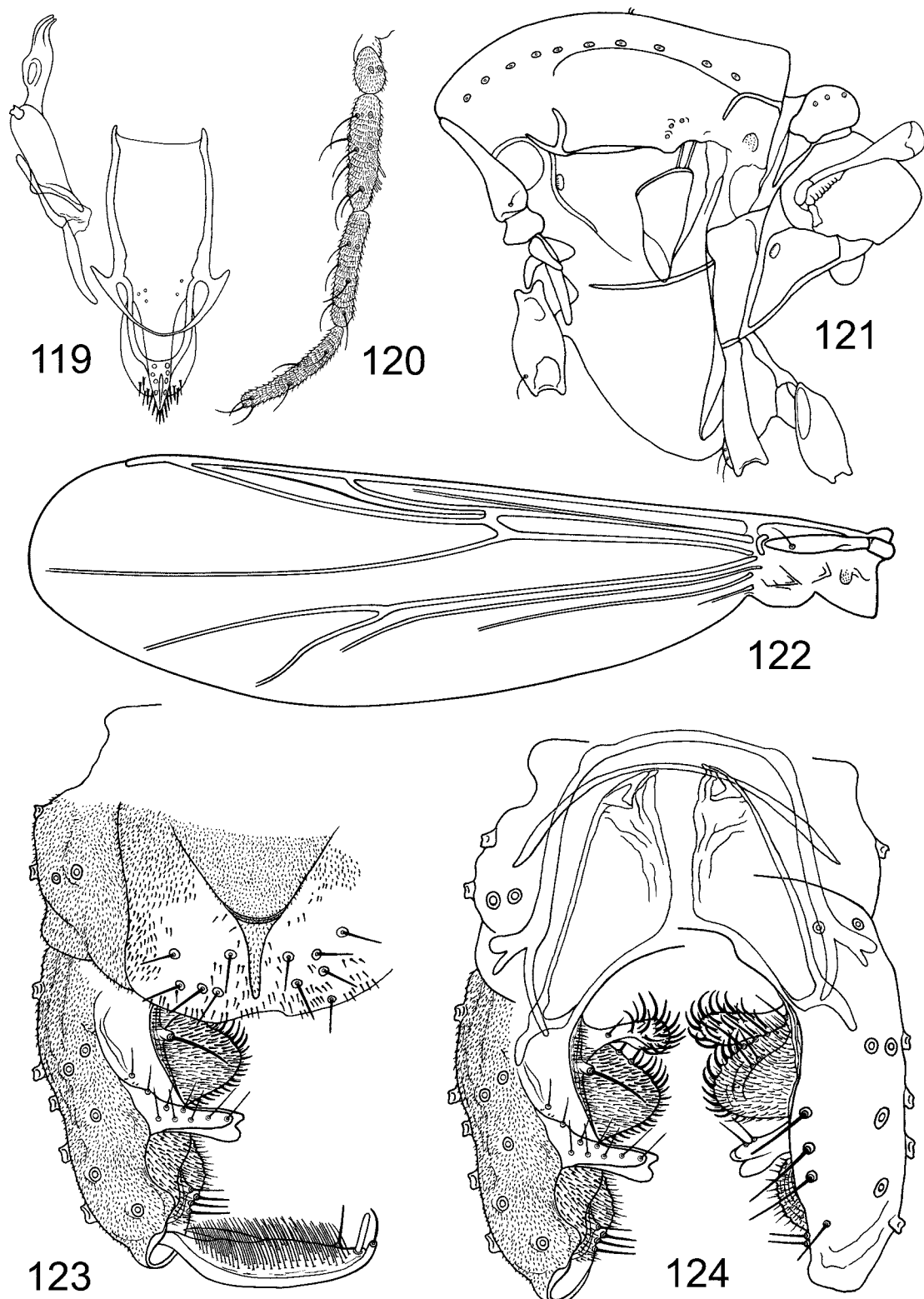
Coloration. Pale brown with blackish brown markings.

Head. AR 0.59–0.72, 0.66 (33). Ultimate flagellomere 169–209, 188 (33) μm long. Temporal setae 6–8, 7; consisting of 3–4, 3 weak inner verticals; 2–3, 2 stronger outer verticals and 1–2, 1 postorbitals. Clypeus with 5–9, 7 setae. Tentorium, stipes and cibarial pump as in Figure 119. Tentorium 50–81, 63 μm long; 11–19, 15 μm wide. Stipes 64–82, 71 μm long; 25–28 (2) μm wide. Palpomere (Fig. 120) lengths (in μm): 11–16, 14; 16–25, 20; 34–54, 51; 52–61, 57; 61–86, 74. Third palpomere with 2–5, 4 lanceolate sensilla clavata; 9–14, 11 μm long.

Thorax (Fig. 121). Median anteprenotal lobes reduced; anteprenotum with 1–2, 1 lateral seta. Dorsocentrals 8–13, 10; acrostichals 2; prealars 2–4, 3; supraalar absent. Scutellum with 4 setae.

Wing (Fig. 122). VR 1.41–1.59, 1.48 (26). Anal lobe weak. Costal extension 27–52, 39 (26) μm long. R₄₊₅ ending slightly proximal to apex of M₃₊₄; Cu₁ weakly sinuate. Brachiolum with 1 seta, other veins bare.

Legs. Spur of fore tibia 25–34, 30 μm long; spurs of mid tibia 14–20, 16 μm and 11–18, 13 μm long; of hind tibia 29–34, 32 μm and 16–18, 17 μm long. Width at apex of fore- and mid tibia 16–18, 17 μm ; of hind tibia 23–27, 25 μm . Comb of 10–12, 11 setae; longest 24–29, 26 μm long; shortest 16–18, 17 μm long. Length and proportions of legs as in Table 13.



FIGURES 119–124. *Pseudosmittia invirgata* sp. n., male. **119**—tentorium, stipes, and cibarial pump; **120**—palp; **121**—thorax; **122**—wing; **123**—hypopygium, dorsal aspect; **124**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Hypopygium (Figs 123–124). Anal point 9–20, 14 μm long; 3–6, 4 μm wide at base. Tergite IX with 8–16, 11 setae. Laterosternite IX with 3–5, 4 setae. Phallapodeme 54–68, 60 μm long; apodeme lobe with wrinkles, anteriorly with strongly sclerotized hook-like structure. Sternapodeme with oral projections indicated in some specimens; transverse sternapodeme about 40–48, 45 μm long. Virga apparently lacking. Gonocoxite 77–98, 87 μm long. Superior volsella club-shaped, 19–21, 20 μm long, with strong, curved microtrichia and 1–2, 1

strong seta on tubercle at base. Median volsella single, broadly rounded to subtriangular, 18–22, 19 μm wide at base, 15–19, 17 μm long, with fringe of strong, curved microtrichia. Inferior volsella with digitiform, apically bilobed anterior lobe, 17–19, 18 μm long, 6–7, 7 μm wide, with several dorsal setae; median lobe inconspicuous, with microtrichia; posterior lobe broadly rounded, 15–18, 17 μm wide at base, with microtrichia and few marginal setae. Gonostylus 41–50, 46 μm long, tapering; densely covered with up to 14 μm long medially directed microtrichia; megaseta 4–7, 6 μm long. HR 1.62–2.39, 1.92. HV 2.17–2.78, 2.47.

TABLE 13. Length (in μm) and proportions of legs of *Pseudosmittia invirgata* sp. n., male (n = 10).

	fe	ti	ta ₁	ta ₂
P ₁	245–281, 267	252–299, 279	137–166, 153	58–76, 65
P ₂	288–313, 303	288–317, 303	104–154, 142	43–72, 64
P ₃	284–302, 294	288–313, 303	154–180, 169	79–90, 82
	ta ₃	ta ₄	ta ₅	LR
P ₁	32–50, 45	22–36, 28	18–29, 22	0.48–0.63, 0.55
P ₂	43–65, 50	25–36, 28	18–29, 23	0.45–0.50, 0.47
P ₃	68–79, 76	29–36, 33	22–29, 24	0.53–0.59, 0.56
	BV	SV	BR	
P ₁	3.73–5.05, 4.37	3.27–3.97, 3.59	2.9–4.5, 3.5	
P ₂	4.22–4.86, 4.65	4.00–4.28, 4.12	4.2–4.8, 4.4	
P ₃	3.38–3.79, 3.58	3.32–3.76, 3.49	4.2–5.8, 4.8	

Distribution and biology. The species is known from Campeche, Mexico where it was collected in Malaise traps in a lowland rain forest between 130 and 300 m altitude.

***Pseudosmittia joaquimvenancioi* (Messias et Oliveira)**

(Figs 125–130)

Bryophaenocladus joaquimvenancioi Messias et Oliveira, 2000: 189.

Pseudosmittia joaquimvenancioi (Messias et Oliveira); Wang et al. (2006: 19).

Pseudosmittia digitata Sæther, 1981: 25, pro parte.

Material examined. BRAZIL: Rio de Janeiro State, Rio de Janeiro, FIOCRUZ Campus, holotype male, 26.iv.1992, Núcleo de Chironomidae (IOC); 5 males, 1 female paratypes, as holotype (IOC). **SAINT VINCENT:** Golden Grove Estate, Yambon River, 1 male (misidentified paratype of *P. digitata*), vii.1972, A.D. Harrison; Majorca, Yambon River, below waterfall, 442 m a.s.l., 4 males, 1 female (misidentified paratypes and allotype of *P. digitata*), vii–viii.1972, Malaise trap, A.D. Harrison; Leeward Highway, Petit Bordel stream, 4 males (misidentified paratypes of *P. digitata*), 18.x.1971, net, A.D. Harrison; Richmond River, backwater at hydro-station weir, 122 m a.s.l., 1 male (misidentified paratype of *P. digitata*), viii.1972, Malaise trap, A.D. Harrison (ZMBN). **SAINT LUCIA:** Castries, lower slope of mountain behind Castries, Malaise trap, 1 male (misidentified paratype of *P. digitata*), 22.xii.1972, A.D. Harrison; as previous except 4 males, 9.i.1973 (ZMBN); Castries, 1 male, 10–22.ix.1972, J.C. Bradley (CU). **BRAZIL: Santa Catarina State,** Jaraquá do Sul, 5 males, 27.v.–15.vii.2003, soil trap on cattle dung (n. 02), Expedition FIOCRUZ (FIOCRUZ) (ZMBN). **São Paulo State,** Ribeirão Preto, Campus USP, 4 males, 2.x.2000, hand net, T. Andersen & H.F. Mendes (ZMBN). **Rio de Janeiro State,** Rio de Janeiro, 1 male, 10.x.1919, Cornell University Expedition (CU); Reserva Biológica Tinguá, Nova Iguaçu, 22°34'30"S 43°26'07"W, 1 male, 5–8.iii.2002, Malaise (Trilha 4), S.T.P. Amarante et al. (BRTIN09: BIOTA-FAPESP) (ZMBN). **VENEZUELA: Aragua State,** Maracay,

Maracay campus, cultivated area, 10°16.390'N, 67°36.607'W, 400 m a.s.l., 5 males, 22.ix.1999, hand net, T. Andersen; Cuyagua, 50 m a.s.l., 2 males, 27.v.1999, hand net, J.L. Garcia, & R. Montilla (ZMBN). **NICARAGUA: Granada Department**, 3 km South of Granada direction Nindaime, 19 males, primo xii.1999, hand net, L.O. Hansen (ZMBN). **COSTA RICA: Heredia Province**, La Selva Biological Station, 1 male, 3.iv.1993, Malaise trap, O.A. Sæther (ZMBN). **MEXICO: Campeche State**, Calakmul Biosphere Reserve, Ejido Gustavo Diaz Ordaz, San Antonio Soda, Río Escondido, 300 m West of town, 18°24'54.9"N, 89°08'13.2"W, 170 m a.s.l., 7 males, 22–23.ix.1997, Malaise trap, A. Contreras-Ramos *et al.* (ZMBN). **Veracruz de Ignacio de la Llave State**, Los Tuxtlas, Tres Zapotes, 1 male, 22.i.1995, L.O. Hansen (ZMBN).

Diagnostic characters. The imagines differ from other members of the genus by having an apical elongation of the third palpomere and carrying 7–13 sensilla clavata.

Male (n = 10, except when otherwise stated). Total length 1.37–1.54, 1.42 mm. Wing length 0.80–0.92, 0.85 mm. Total length / wing length 1.55–1.75, 1.67. Wing length / length of profemur 2.67–2.91, 2.79.

Coloration. Thorax dark brown with lighter scutellum, abdomen brown with paler anterior margins of tergites.

Head. AR 0.86–1.16, 1.03; ultimate flagellomere 238–281, 268 µm long. Temporal setae 4–7, 5; consisting of 2–3, 3 outer verticals; 2–3, 2 inner verticals and 0–2, 1 postorbitals. Clypeus with 8–11, 9 setae. Tentorium, stipes and cibarial pump as in Figure 125. Tentorium 79–93, 87 µm long; 13–18, 16 µm wide. Stipes 84–93, 89 µm long; 25–29, 27 µm wide. Palpomere (Fig. 126) lengths (in µm): 11–16, 14; 20–27, 25; 50–59, 54; 57–68, 61; 84–109, 95. Third palpomere with 16–23, 19 µm long digitiform projection and 7–13 lanceolate sensilla clavata in one or two groups, longest 11–16, 14 µm long.

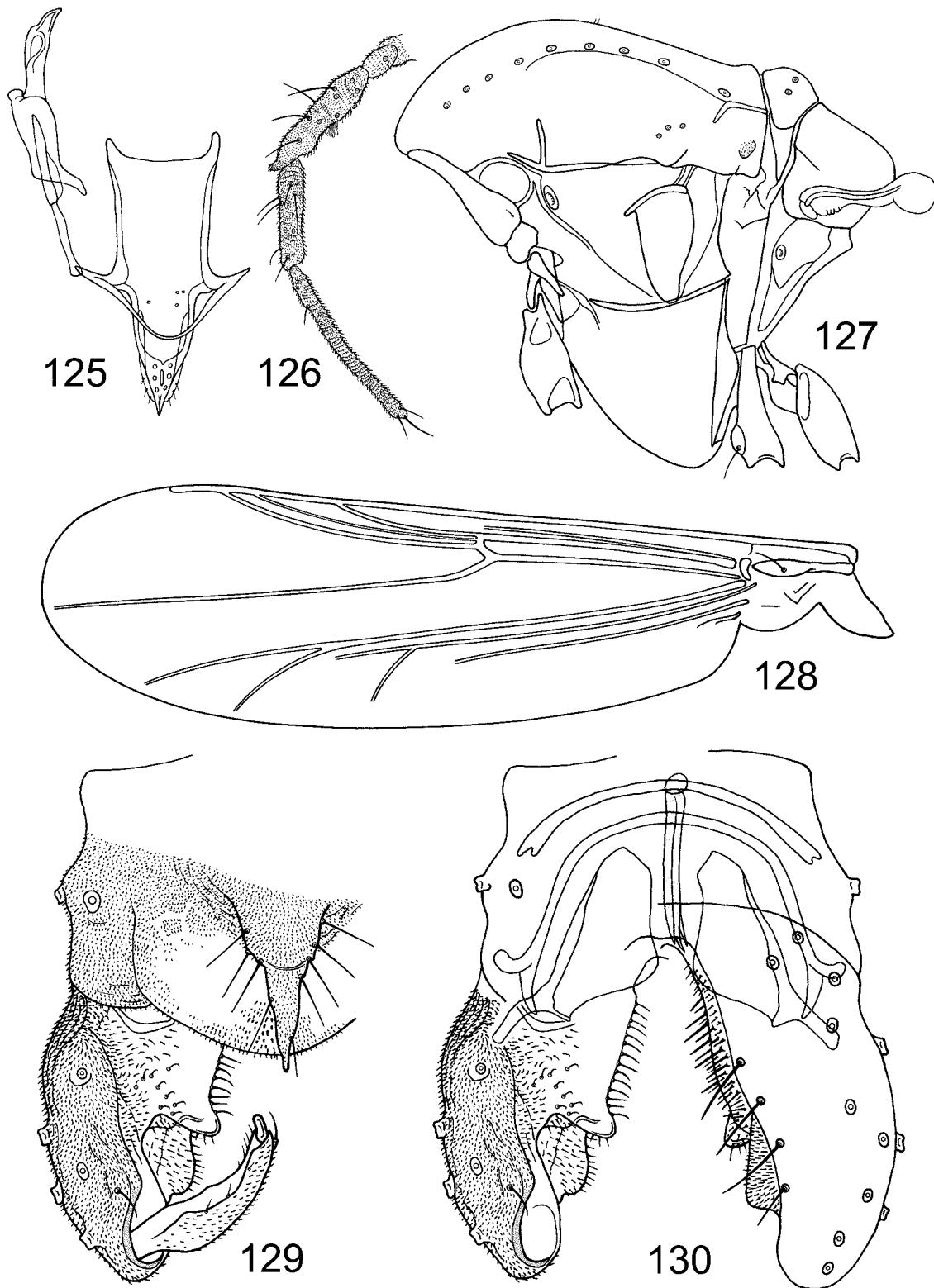
Thorax (Fig. 127). Median anteprenotal lobes reduced; anteprenotum with 1 lateral seta. Dorsocentrals 9–12, 10; acrostichals 2; prealars 3; supraalar absent. Scutellum with 4–6, 5 setae.

Wing (Fig. 128). Anal lobe weakly developed. Cu₁ weakly curved; postcubital fork present. R₄₊₅ ending distal to apex of Cu₁. VR 1.62–1.97, 1.74; VR₂ 1.21–1.68, 1.43. Costal extension 5–50, 20 µm long. Brachiolium with 1 seta, other veins bare.

Legs (n = 6–8). Spur of fore tibia 27–36, 33 µm long; spurs of mid tibia 18–21, 20 µm and lost; of hind tibia 29–39, 34 µm and 15–20, 18 µm long. Width at apex of fore tibia 18–23, 20 µm; of mid tibia 18–23, 20 µm; of hind tibia 29–34, 31 µm. Comb with 12–16, 14 setae; longest 27–36, 31 µm long; shortest 13–20, 16 µm long. Length and proportions of legs as in Table 14.

TABLE 14. Length (in µm) and proportions of legs of *Pseudosmittia joaquimvenancioi* (Messias *et* Oliveira), male (n = 8–10).

	fe	ti	ta ₁	ta ₂
P ₁	292–346, 317	338–400, 371	144–169, 158	58–65, 61
P ₂	338–396, 367	356–396, 371	166–198, 180	72–86, 79
P ₃	324–396, 364	338–378, 385	198–252, 220	94–108, 101
	ta ₃	ta ₄	ta ₅	LR
P ₁	43–58, 47	29–43, 32	29–32, 31	0.42–0.47, 0.44
P ₂	47–61, 58	32–47, 40	25–32, 29	0.45–0.49, 0.47
P ₃	86–108, 97	36–54, 43	32–36, 35	0.55–0.61, 0.58
	BV	SV	BR	
P ₁	4.60–4.87, 4.74	4.09–4.48, 4.28	2.2–3.0, 2.5	
P ₂	4.27–4.87, 4.62	3.96–4.48, 4.17	2.6–4.0, 2.9	
P ₃	3.46–3.63, 3.53	3.21–3.53, 3.39	3.8–4.4, 4.0	



FIGURES 125–130. *Pseudosmittia joaquimvenancioi* (Messias *et* Oliveira, 2000), male. **125**—tentorium, stipes, and cibarial pump; **126**—palp; **127**—thorax; **128**—wing; **129**—hypopygium, dorsal aspect; **130**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Hypopygium (Figs 129–130). Anal point 15–32, 24 μm long, with 0–4, 2 setae. Tergite IX with 3–9, 7 additional setae. Laterosternite IX with 2–3, 3 setae. Phallapodeme 45–59, 54 μm long. Sternapodeme evenly rounded with no trace of oral projections, arched part about 50–61, 54 μm long. Virga 38–52, 45 μm long. Gonocoxite 95–118, 101 μm long. Inferior volsella well developed; anterior lobe with rounded apex; posterior

lobe broadly rounded to subtriangular. Gonostylus 43–57, 50 μm long; megaseta 4–7, 5 μm long. HR 1.72–2.50, 2.06. HV 2.59–3.25, 2.85.

Female (n = 1–2). Total length 1.40 mm. Wing length 0.68–0.76 mm. Total length / wing length 2.05. Wing length / length of profemur 2.47–2.53.

Coloration. Brown with light brown scutellum.

Head. AR 0.44. Lengths (in μm) of flagellomeres: 50, 34, 34, 32, 66. Temporal setae 4–5, including 2 inner verticals and 2–3 outer verticals. Clypeus with 7–15 setae. Tentorium 59–75 μm long, 9–10 μm wide. Stipes 82–87 μm long. Palpomere lengths (in μm): 18–25, 27, 73–85, 57, lost. Third palpomere with 18–21 μm long apical projection and 5–7 lanceolate sensilla clavata. Coronal suture absent.

Thorax. Median anteprenotal lobes reduced; anteprenotum with 1–2 lateral seta. Dorsocentrals 12, acros-tichals 2, prealars 3, supraalar absent. Scutellum with 4–6 setae.

Wing. VR 1.74–1.80. Anal lobe weak. Costal extension 71–94 μm long. R_{4+5} ending proximal to apex of M_{3+4} ; Cu_1 straight. Brachiolum with 1 seta; costa between FR and apex of R_{4+5} with 12–19 non-marginal setae, costal extension with 8–10 non-marginal setae, R with 6–7 setae, R_1 with 4–5, R_{4+5} with 8–10 setae, other veins bare.

Legs. Spur of fore tibia 23 μm long, spurs of mid tibia 22 μm and 14 μm long, of hind tibia 37 μm and 14–16 μm long. Width at apex of fore tibia 22 μm , of mid tibia 25 μm , of hind tibia 32 μm . Comb of 11–12 setae, longest 30–37 μm long, shortest 21–23 μm long. Length and proportions of legs as in Table 15.

TABLE 15. Lengths (in μm) and proportions of legs of *Pseudosmittia joaquimvenancioi* (Messias *et* Oliveira), female (n = 1–2).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
p ₁	270–239, 219	306–335	140	59	45–54	32–41
p ₂	324–351	351–360	162	77	54	41
p ₃	315–342	347	198	90	95	41
	ta ₅	LR	BV	SV	BR	
p ₁	27–36	0.44–0.46	4.02–4.22	4.13–4.42	2.2	
p ₂	32	0.46	4.13	4.17	2.3	
p ₃	32	0.57	3.35	3.34	2.5	

Abdomen. Tergite I bare, T II–VII each with 9–12 setae, T VIII with 6 setae. Sternite I–II bare, S III–VII each with 4–5 setae, S VIII with 18 setae.

Genitalia. Gonocoxite comparatively well developed, without long posterior corner, with 4 strong and 2 weak setae. Tergite IX undivided, with altogether 4 setae. Cercus 43 μm long. Apodeme against gonocoxite 69 μm long. Seminal capsule moderately dark, ovoid, 48 μm long, 43 μm wide, with 11 μm long microtrichia. Notum 53 μm long.

Remarks. The digitiform projection of the third palpomere led to the placement of *P. joaquimvenancioi* in *Bryophaenocladus* (Messias & Oliveira 2000). Examination of the types, however, shows that the species belongs in *Pseudosmittia* Edwards and is identical to *P. digitata* described from the Caribbean (Sæther 1981). However, the situation is more complex. The types of *P. digitata* were in bad shape. The illustrated male had lost the palp and other specimens were without legs etc. This revision has shown that the type material from St. Vincent and St. Lucia consists of two species, one with a digitiform projection on third palpomere and one without (Wang *et al.* 2005). The holotype belongs to the species without a projection, which receives the unfortunate name of *P. digitata*, while the one with a digitiform projection is *Pseudosmittia joaquimvenancioi* (Messias *et* Oliveira).

Distribution and biology. The species apparently is widespread and common in the Neotropical Region. In Brazil it was collected in impacted areas including the Instituto Oswaldo Cruz Campus in Rio de Janeiro

City and the Universidade de São Paulo Campus in Ribeirão Preto, as well as reared from cattle dung in Jaraguá do Sul in Santa Catarina State. In Venezuela it was collected in a cultivated area on the Universidad Central de Venezuela Campus in Maracay. In Costa Rica and Mexico it has also been taken in areas with low-land rainforest. The males often form dense swarms above vegetation during day time.

***Pseudosmittia lamasi* sp. n.**

(Figs 131–135)

Type material. Holotype male, **BRAZIL: São Paulo State**, Estação Ecológica Juréia-Itatins, Peruíbe, 24°31'06"S, 47°12'06"W, 3.v.2002, Malaise trap (Trilha 1), N.W. Perioto *et al.* (PEJU17: BIOTA-FAPESP) (MZUSP). Paratype: 1 male, as holotype except 6.v.2002, (PEJU11) (ZMBN).

Diagnostic characters. The large lobe-like superior volsella with median volsella either lacking or fused with inferior or superior volsella is unique within the genus. The presence of a hyaline anal point is unique among the Neotropical species.

Etymology. Named after Carlos J. E. Lamas, curator at MZUSP and responsible for making the BIOTA-FAPESP project material available to us.

Male (n = 1–2). Total length 1.62 mm. Wing length 0.84–0.90 mm. Total length / wing length 1.81. Wing length / length of profemur 2.51–2.87.

Coloration. Thorax and abdomen brown, legs pale brown.

Head. AR 0.83, ultimate flagellomere 252 µm long. Temporal setae 3–5, including 1–3 inner verticals and 2 outer verticals. Clypeus with 5–6 setae. Tentorium, stipes and cibarial pump as in Figure 131. Tentorium 79–88 µm long, 14–16 µm wide. Stipes 81–95 µm long, 23 µm wide. First and second palpomere lengths (in µm): 14, 20–25, remaining segments lost.

Thorax (Fig. 132). Median anteprenotal lobes reduced; anteprenotum with 1 lateral seta. Dorsocentrals 8–9, acrostichals 2, prealars 3, supraalar absent. Scutellum with 2–6 setae.

Wing (Fig. 133). Anal lobe weakly developed. Cu₁ curved. R₄₊₅ ending opposite to apex of M₃₊₄. VR 1.46–1.57. Costal extension 25–29 µm long. Brachiolum with 1 seta, other veins bare.

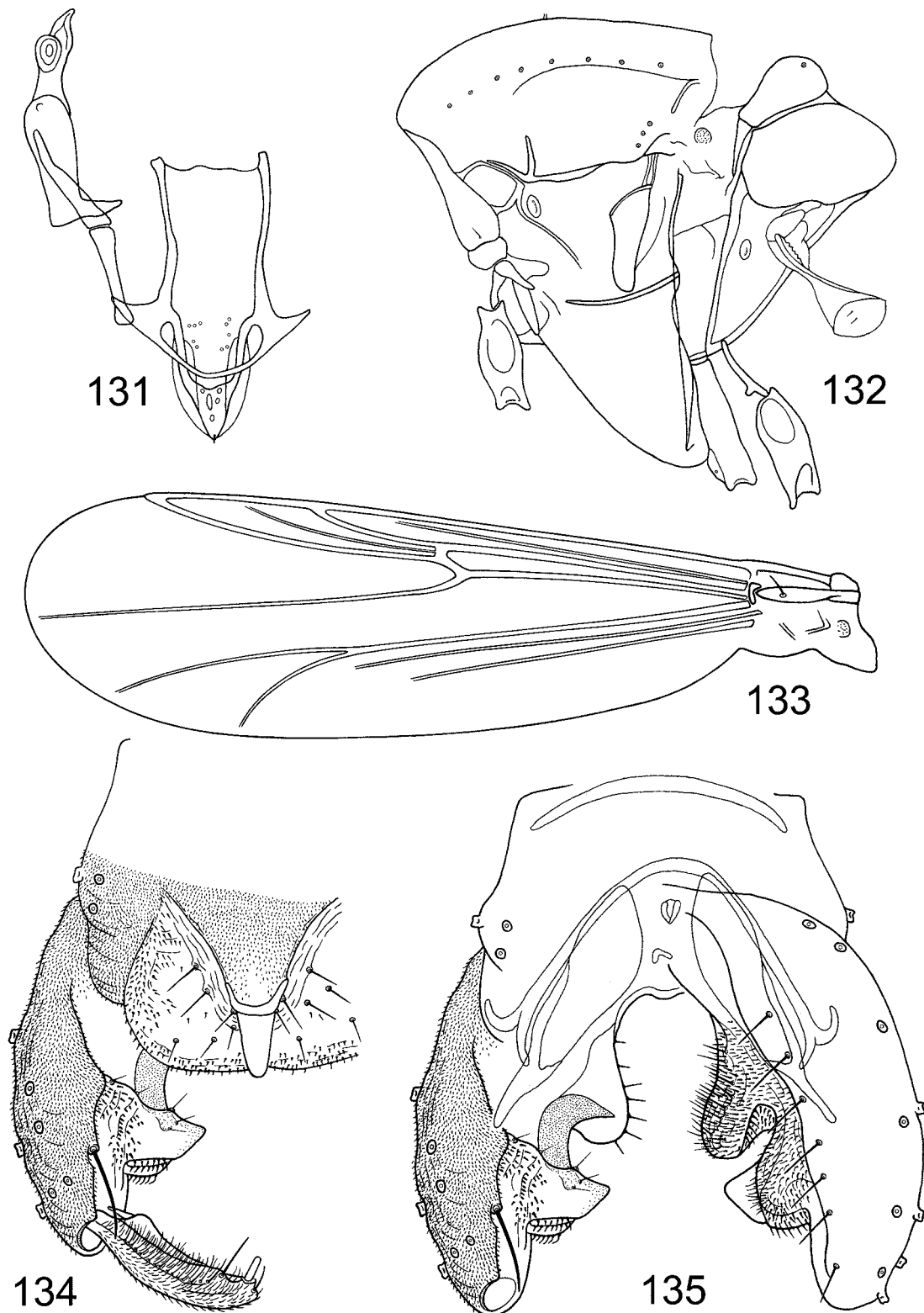
Legs. Spur of fore tibia 38 µm long, of mid tibia 18 µm and 16 µm long, of hind tibia 36 µm and 18 µm long. Width at apex of fore tibia 18–23 µm, of mid tibia 20 µm, of hind tibia 27 µm. Comb with 9–10 setae, longest 27–32 µm long, shortest 18 µm long. Length and proportions of legs as in Table 16.

TABLE 16. Length (in µm) and proportions of legs of *Pseudosmittia lamasi* sp. n., male (n = 1–2).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
P ₁	302–364	349–385	151–173	79	60	32	29	0.46	4.56	4.27	2.4
P ₂	–	353	150	76	54	29	22	–	–	–	2.8
P ₃	342–360	367–378	191	94	94	40	25	0.52	3.57	3.72	3.0

Hypopygium (Figs 134–135). Anal point hyaline, bluntly triangular, 18–21 µm long, 11–13 µm wide at base, with 2–4 setae at base. Tergite IX with 6–10 additional setae. Laterosternite IX with 3 setae. Phallopodeme 61–75 µm long. Sternapodeme evenly rounded, with no trace of oral projections, arched part about 41–50 µm long. Virga 9–11 µm long, apparently without lateral lamellae. Gonocoxite 120–127 µm long. Superior volsella broadly rounded, 29–30 µm wide at base, about 17–20 µm long, with few marginal microtrichia. Inferior volsella with 19–21 µm long, 12–16 µm wide anterior lobe, triangular in apical half, with few dorsal setae; posterior lobe rounded. Inner margin of gonocoxite between superior and inferior volsellae curved, strongly sclerotized. Gonostylus 52–55 µm long, with bluntly triangular basal crista dorsalis; megaseta 6–7 µm long. HR 2.30–2.33. HV 3.10

Distribution and biology. Two specimens were collected in a Malaise trap in a primary lowland Mata Atlântica forest in São Paulo State, Brazil.



FIGURES 131–135. *Pseudosmittia lamasi* sp. n., male. **131**—tentorium, stipes, and cibarial pump; **132**—thorax; **133**—wing; **134**—hypopygium, dorsal aspect; **135**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

***Pseudosmittia lamellata* sp. n.**

(Figs 136–141)

Pseudosmittia sp. 4 Pinho *et al.* (2009: 164).

Type material. Holotype male, **BRAZIL: São Paulo State**, Cananéia, restinga (GITA), 25°01'59"S, 44°47'7.9"W, 9 m a.s.l., 16.ii.2002, Malaise trap, F.O. Roque (MZUSP). Paratypes: 1 male, São Paulo State, Parque Estadual Serra do Mar, Ubatuba, 23°21'43"S, 44°59'22"W, 24.i.2002, Malaise trap (Bosque 6), N.W. Perioto *et al.* (BRUB11: BIOTA-FAPESP) (ZMBN); 1 male, Estação Ecológica Juréia-Itatins, Peruíbe, 24°31'06"S, 47°12'06"W, 6.v.2002, Malaise trap (Trilha 3), N.W. Perioto *et al.* (PEJU16: BIOTA-FAPESP) (ZMBN); 1 male, as previous except Malaise trap (Bosque 9) (PEJU13: BIOTA-FAPESP) (MZUSP). 1 male, **Rio de Janeiro State**, Reserva Biológica Tinguá, Nova Iguaçu, 22°34'37"S, 43°26'06.6"W, 8–11.iii.2002, Malaise trap (Bosque 1), S.T.P. Amarante *et al.* (BRTIN07: BIOTA-FAPESP) (ZMBN); 1 male, as previous except 22°34'30"S, 43°26'07"W, 5–8.iii.2002, Malaise trap (Trilha 4), (BRTIN09: BIOTA-FAPESP) (ZMBN); 2 males, as previous except (BRTIN12: BIOTA-FAPESP) (MZUSP); 2 males, as previous except 22°34'28"S, 43°26'09"W, Malaise trap (Trilha 5), (BRTIN11: BIOTA-FAPESP) (MZUSP); 4 males, as previous except 22°34'32"S, 43°26'06.6"W, 8–11.iii.2002, Malaise trap (Trilha 3), (BRTIN13: BIOTA-FAPESP) (MZUSP, ZMBN); 1 male, as previous except 22°34'27"S, 43°26'11.4"W, 5–8.iii.2002, Malaise trap (Trilha 6), (BRTIN14: BIOTA-FAPESP) (ZMBN); 2 males, as previous except 22°34'32"S, 43°26'07.6"W, 8–11.iii.2002, Malaise trap (Bosque 3), (BRTIN18: BIOTA-FAPESP) (ZMBN). 3 males, **Bahia State**, Reserva de Sapi-ranga, Mata de São João, 12°33'36.4"S, 38°02'57.2"W, 19–22.vii.2001, Malaise trap (Bosque 3), M.T. Tavares *et al.* (BRBA5x: BIOTA-FAPESP) (MZUSP, ZMBN); 2 males, as previous except 12°33'41.7"S, 38°02'42.9"W, Malaise trap (Bosque 2) (BRBA9x: BIOTA-FAPESP) (ZMBN). 3 males, **Amazonas State**, Manaus, Reserva Soka Gakkai, (Lago), 12–14.ii.2008, Pennsylvania trap, N. Hamada *et al.* (INPA, ZMBN).

Diagnostic characters. The species differs from other members of the genus except *P. tropis* sp. n. by having a long virga with lateral lamellae. It differs from *P. tropis* by having a more curved gonostylus without outer corner.

Etymology. From Latin, *lamellatus*, equipped with plates, referring to the lateral lamellae of the virga.

Male (n = 8–10, except when otherwise stated). Total length 0.99–1.45, 1.21 mm. Wing length 0.57–0.78, 0.66 mm. Total length / wing length 1.60–1.99, 1.77 (7). Wing length / length of profemur 2.52–2.90, 2.76.

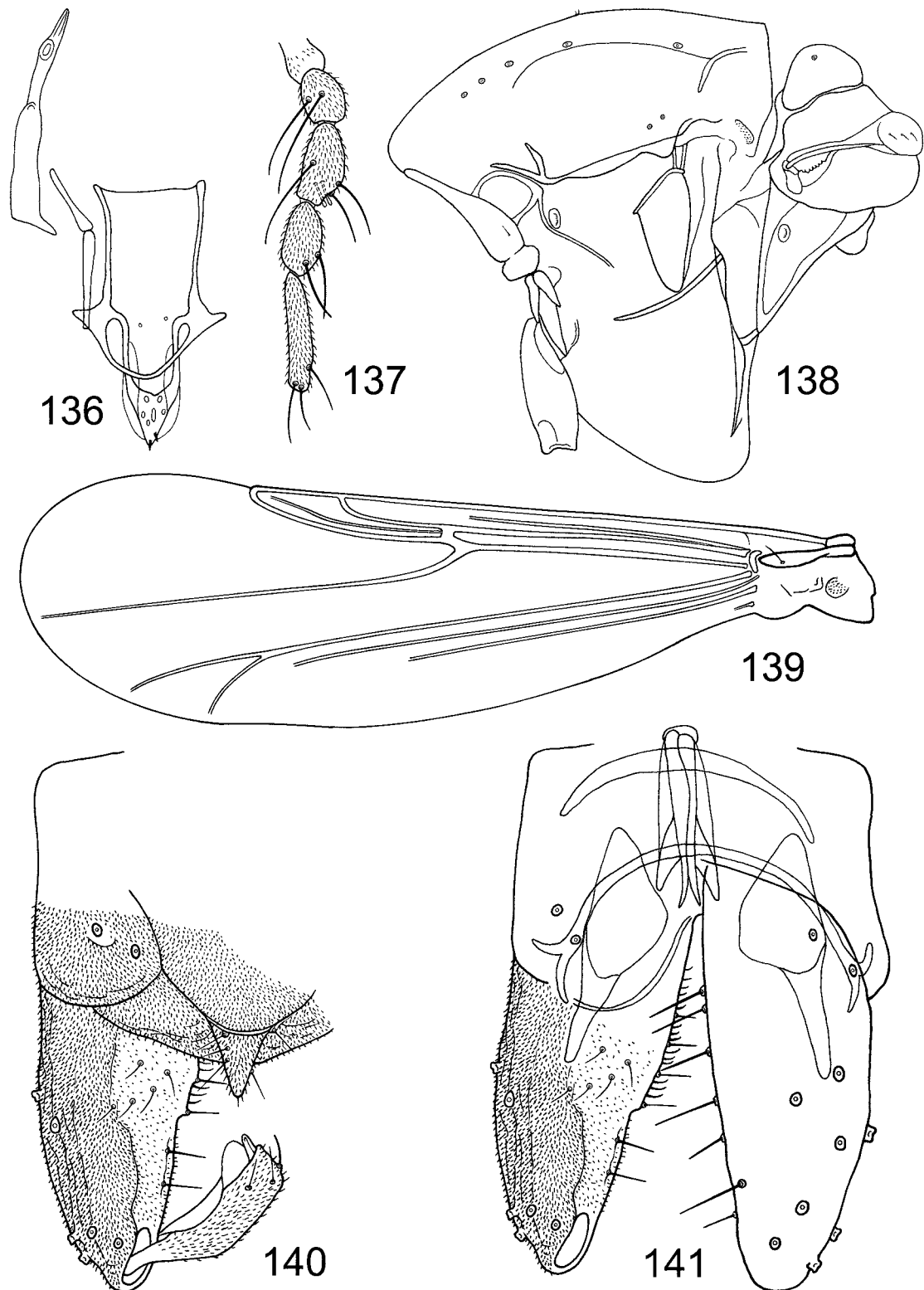
Coloration. Dark brown.

Head. Ultimate flagellomeres 10–13 partially to completely fused, when partially fused and considered as 13 flagellomeres, AR 0.35–0.85, 0.65 and ultimate flagellomere 103–241, 185 µm long; when fused and considered as 12 flagellomeres, AR 0.70 (1) and ultimate flagellomere 166 (1) µm long; as 11 flagellomeres, AR 0.65 (1) and ultimate flagellomere 154 (1) µm long; as 10 flagellomeres, AR 0.67 (1) and ultimate flagellomere 158 (1) µm long. Temporal setae 2–5, 3; including 0–3, 1 inner vertical and 1–2, 2 outer verticals. Clypeus with 4–9, 6 setae. Tentorium, stipes and cibarial pump as in Figure 136. Tentorium 55–86, 74 µm long; 7–14, 10 µm wide. Stipes 48–82, 67 µm long, 30 (1) µm wide. Palpomere (Fig. 137) lengths (in µm): 8–15, 11; 12–26, 18; 20–30, 25; 20–30, 25; 31–38, 36. Third palpomere with 2–4, 3 lanceolate sensilla clavata; longest 7–11, 9 µm long.

Thorax (Fig. 138). Median anteprenotal lobes reduced; anteprenotum with 0–3, 2 lateral setae. Dorsocentrals 3–6, 5; acrostichals 2; prealars 1–3, 2; supraalar absent. Scutellum with 2–4, 2 setae.

Wing (Fig. 139). Anal lobe absent. Cu₁ curved. R₄₊₅ ending opposite apex of Cu₁. VR 1.69–1.79, 1.70. Costa not extended. Brachiolum with 1 seta, other veins bare.

Legs. Spur of fore tibia 17–25, 22 µm long; spurs of mid tibia 9–19, 12 (6) µm and 8–11, 9 µm long; of hind tibia 20–34, 25 µm and 9–15, 11 µm long. Width at apex of fore tibia 14–16, 15 µm; of mid tibia 12–15, 13 µm; of hind tibia 14–17, 16 (5) µm. Comb with 7–11, 10 setae; longest 18–27, 21 µm long, shortest 10–17, 14 µm long. Length and proportions of legs as in Table 17.



FIGURES 136–141. *Pseudosmittia lamellata* sp. n., male. **136**—tentorium, stipes, and cibarial pump; **137**—palp; **138**—thorax; **139**—wing; **140**—hypopygium, dorsal aspect; **141**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Hypopygium (Figs 140–141). Anal point 12–26, 18 μm long, 7–14, 10 μm wide at base, with 4–11, 7 setae. Tergite IX with no additional setae. Laterosternite IX with 2–3, 2 setae. Phallapodeme 34–57, 47 μm long. Sternapodeme evenly rounded, with no trace of oral projections, arched part about 31–52, 43 μm long. Virga 33–47, 39 μm long; with lateral lamellae. Gonocoxite 79–104, 92 μm long. Superior volsella low,

reaching to about 0.6 of gonocoxite length, fringed with strong, orally curved microtrichia. Gonostylus 34–50, 40 μm long, with bluntly triangular apical crista dorsalis; megaseta 2–6, 4 μm long. HR 1.94–2.87, 2.24. HV 2.16–3.62, 3.01.

TABLE 17. Length (in μm) and proportions of legs of *Pseudosmittia lamellata* sp. n., male (n = 2–3).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
P ₁	198–259	230–274	100–173	43–58	32–50	14–25
P ₂	241–302	245–321	104–184	58–85	40–47	18–38
P ₃	223–302	252–331	115–189	50–99	50–90	14–38
	ta ₅	LR	BV	SV	BR	
P ₁	11–22	0.43–0.63	4.56–5.23	3.08–4.33	2.9–3.0	
P ₂	14–28	0.38–0.57	2.66–4.94	3.38–5.14	3.0–3.1	
P ₃	12–28	0.37–0.57	3.22–4.62	3.35–5.07	2.3–5.1	

Remarks. This species and *P. tropis* sp. n. both have a long virga with lateral lamella otherwise only found in an undescribed Afrotropical *Pseudosmittia*. They thus must be regarded as only tentatively placed in the genus. *P. palpina* sp. n. apparently does not have virga with lateral lamella. However, its gonostylus looks exactly like the undescribed Afrotropical species and similar to that of *P. lamellata*.

Distribution and biology. The species apparently is widespread in Brazil as it has been taken in several nature reserves with Mata Atlântica forest along the Brazilian coast and also in a reserve in the middle of the Amazon forest in Amazonas State.

***Pseudosmittia magdae* sp. n.**

(Figs 142–147)

Type material. Holotype male, **BRAZIL: São Paulo State**, Parque Estadual Intervales, gruta Paiva, 14.viii.2001, CDC trap, E. Galati (MZUSP). Paratypes: 2 males, São Paulo State, Usina Santa Isabel, Campos do Jordão, 28.vi.2002, M.V. Yamada (MZUSP, ZMBN). 1 male, **Paraná State**, Parque Estadual do Pau Oco, Morretes, 25°34'27.9"S, 48°53'46.7"W, 10–13.iv.2002. Malaise trap (Bosque 1) M.T. Tavares *et al.* (BRPR28: BIOTA-FAPESP) (ZMBN).

Diagnostic characters. The species differ from *P. forcipata* by having a bilobed gonostylus with lateral lobe adpressed to gonostylus, median volsella subrectangular and superior volsella with 2–4 large tubercles with apical seta in basal half.

Etymology. Named after Dr. Magda Viviane Yamada, who made most of the chironomids sampled during her project available to us.

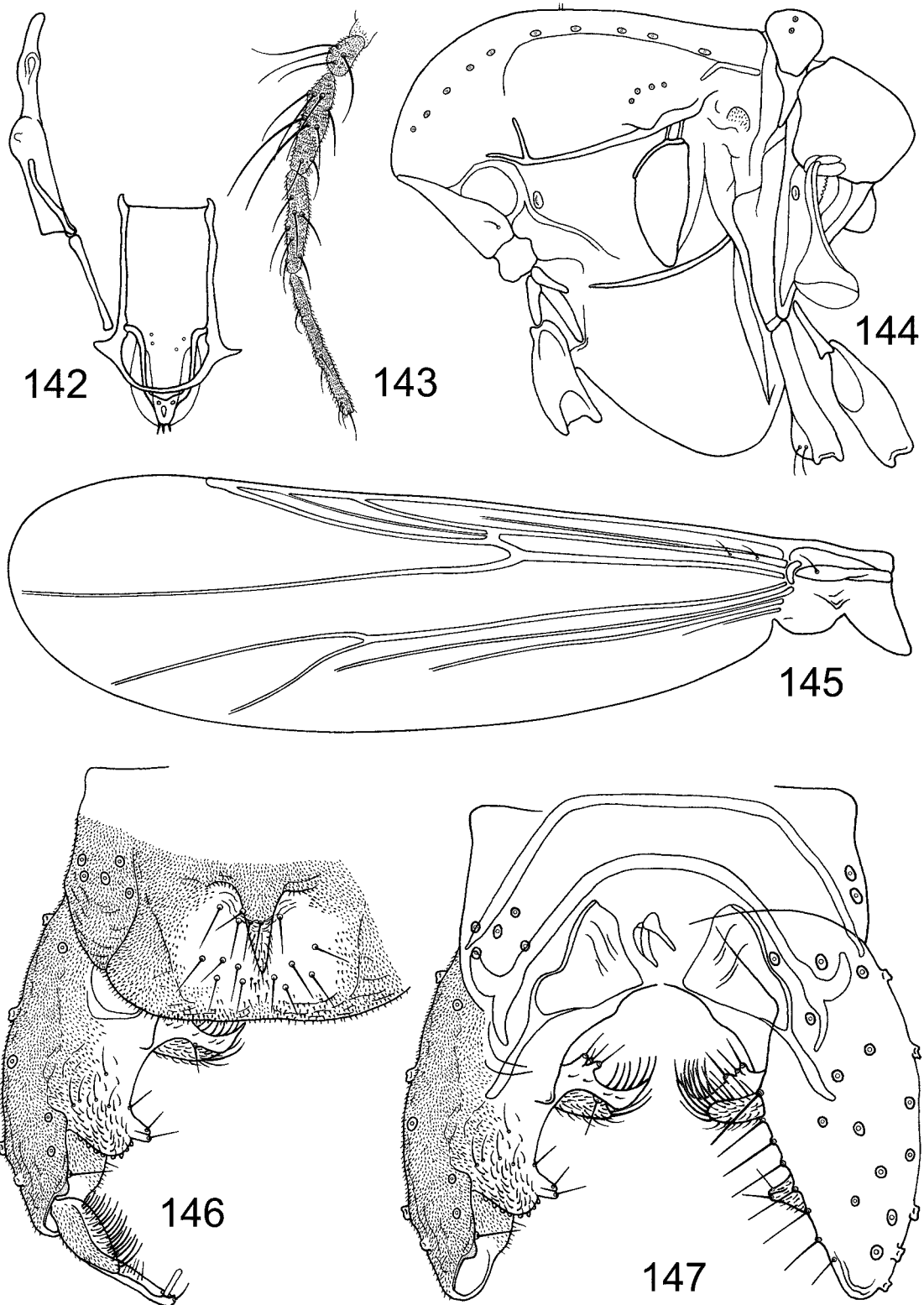
Male (n = 2–3, except when otherwise stated). Total length 1.44–1.71 mm. Wing length 0.83–1.13 mm. Total length / wing length 1.40–1.73. Wing length / length of profemur 3.21–3.46.

Coloration. Fully brown.

Head. AR 0.79–1.02. Ultimate flagellomere 230–319 μm long. Temporal setae 5–6, consisting of 3–4 inner verticals and 2 outer verticals. Clypeus with 9 setae. Tentorium, stipes and cibarial pump as in Figure 142. Tentorium 82–101 μm long, 16–45 μm wide. Stipes 73–86 μm long. Palpomere (Fig. 143) lengths (in μm): 14–23, 27–30, 62–83, 70–77, 79 (1). Third palpomere with 2 lanceolate sensilla clavata, 9–19 μm long.

Thorax (Fig. 144). Median anteprenotal lobes reduced; anteprenotum with 1 (1) lateral seta. Dorsocentrals 7–10, acrostichals 2, prealars 3–4, supraalar absent. Scutellum with 4–6 setae.

Wing (Fig. 145). VR 1.49–1.61. Anal lobe indicated. Costal extension 19–23 μm long. R_{4+5} ending distinctly proximal to apex of M_{3+4} ; Cu_1 slightly sinuate. Brachiolum with 1 seta, R with 0–2 setae, other veins bare.



FIGURES 142–147. *Pseudosmittia magdae* sp. n., male. **142**—tentorium, stipes, and cibarial pump; **143**—palp; **144**—thorax; **145**—wing; **146**—hypopygium, dorsal aspect; **147**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Legs. Spur of fore tibia 34–38 µm long, spurs of mid tibia 19–23 µm and 9–14 µm long, of hind tibia 34–39 µm and 16–21 µm long. Width at apex of fore tibia 17–23 µm, of mid tibia 18–21 µm, of hind tibia 25–40 µm. Comb of 12–13 setae, longest 32–38 µm long, shortest 16–19 µm long. Length and proportions of legs as in Table 18.

TABLE 18. Length (in µm) and proportions of legs of *Pseudosmittia magdae* sp. n., male (n = 1–3).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
P ₁	274–331	299–397	–	–	–	–	–	–	–	–	–
P ₂	356–406	349–425	–	–	–	–	–	–	–	–	–
P ₃	334–378	346–425	246	113	113	47	33	0.58	3.45	3.33	3.3

Hypopygium (Figs 146–147). Anal point 12–18 µm long, 7–8 µm wide at base, with 0–4 setae. Tergite IX with 11–15 additional setae. Laterosternite IX with 2–5 setae. Phallapodeme 70–78 µm long, apodeme lobe with 2 indistinct wrinkles. Sternapodeme evenly rounded with no trace of oral projections, arched part about 45–50 µm long. Virga apparently with 2 tapering spines, 11–16 µm long. Gonocoxite 107–146 µm long. Superior volsella 28–32 µm long, sigmoid, tapering, apex projecting anteriomedially, with anterior fringe of long microtrichia in apical half and 2–4 conspicuous large tubercles with apical seta in basal half. Median volsella subrectangular with rounded apex, 11–15 µm wide at base, 21–25 µm long, covered with microtrichia and with anterior and apical fringe of long microtrichia. Inferior volsella with 6–7 µm wide, 12–15 µm long anterior lobe, with rounded to weakly bilobed apex, with few apical setae; median lobe 10–14 µm wide, 17–18 µm long, dorsally covered with orally curved microtrichia. Gonostylus 44–56 µm long, narrow; with 30–38 µm long lateral lobe partly fused with gonostylus, with long medially directed microtrichia; megaseta 9–11 µm long. HR 2.41–2.60. HV 2.85–3.25.

Distribution and biology. The species was taken in two nature reserves with Mata Atlântica forest in São Paulo and Paraná States at altitudes above 800 m a.s.l. In São Paulo it was collected in a light trap (CDC) while in Paraná in Malaise traps.

Pseudosmittia nana sp. n.

(Figs 148–153)

Pseudosmittia sp. 3 Pinho *et al.* (2009: 164).

Type material. Holotype male, **BRAZIL: Bahia State**, Estação Ecológica Pau Brasil, Porto Seguro, 16°23'17.6"S, 39°10'55.6"W, 17.v.2002, 107 m a.s.l., Malaise trap (Trilha 1), C.O. Azevedo *et al.* (BRPS20: BIOTA-FAPESP), (MZUSP). Paratypes: 2 males, **São Paulo State**, Parque Estadual Intervales, Ribeirão Grande, Barra Grande, 24°15'S, 48°10'W, 10–13.xii.2000, Malaise trap (Trilha 2), M.T. Tavares *et al.* (PEIN07: BIOTA-FAPESP) (ZMBN); 1 male, as previous except 13–16.xii.2000, Malaise trap (Trilha 5), (PEIN09: BIOTA-FAPESP) (MZUSP).

Diagnostic characters. The species differs from other members of the genus by having scalpellate acros-tichals and from other Neotropical species except *P. windwardensis* by the long costal extension.

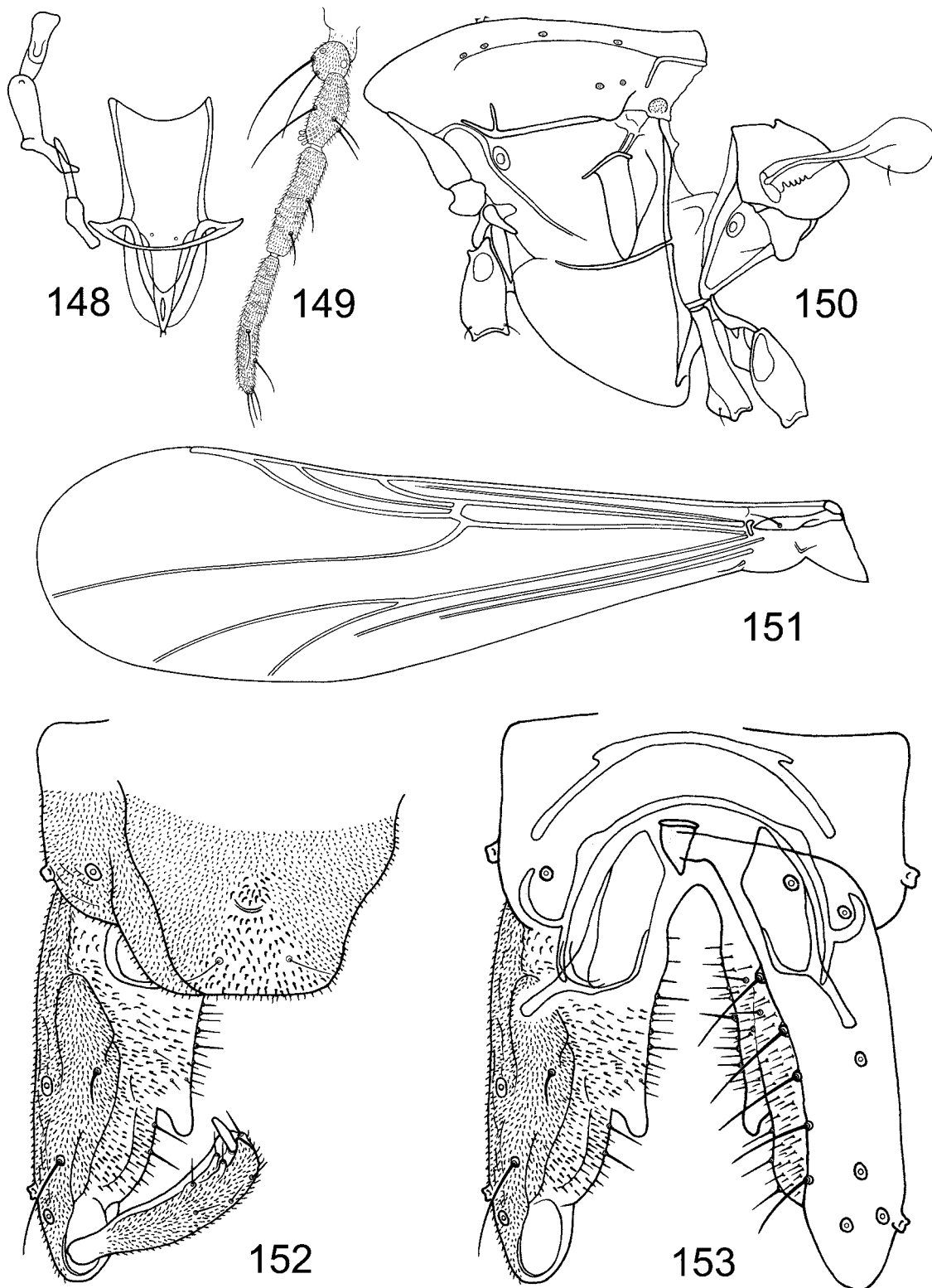
Etymology. From Latin, *nanus*, dwarf, referring to the small size.

Male (n = 3–4, except when otherwise stated). Total length 0.98–1.30 mm. Wing length 0.55–0.79, 0.70 mm. Total length / wing length 1.71–1.83. Wing length / length of profemur 2.57–3.16.

Coloration. Thorax brown; abdomen with segments 3–5 pale, remaining segments brown; femora and basal half of tibiae brown, apical half of tibiae and tarsi pale brown.

Head. Antenna with twelve flagellomeres, AR 0.33 (1), ultimate flagellomere 90 (1) µm long or with thirteen flagellomeres, AR 0.32–0.36, ultimate flagellomere 126–139 µm long. Temporal setae 3–5, 4; consisting

of 2–4, 3 inner verticals; 0–2, 1 outer verticals and 0–2, 1 postorbitals. Clypeus with 6–9, 7 setae. Tentorium, stipes and cibarial pump as in Figure 148. Tentorium 49–81, 68 μm long; 9–11, 10 μm wide. Stipes 49 (1) μm long. Palpomere (Fig. 149) lengths (in μm): 8–15, 11; 15–18, 16; 24–32, 28; 30–45, 41; 47–61, 55. Third palpomere with 3–4 lanceolate sensilla clavata, 7–11 μm long.



FIGURES 148–153. *Pseudosmittia nana* sp. n., male. **148**—tentorium, stipes, and cibarial pump; **149**—palp; **150**—thorax; **151**—wing; **152**—hypopygium, dorsal aspect; **153**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Thorax (Fig. 150). Median anteprenotal lobes strongly reduced; anteprenotum with 0–1, 1 lateral seta. Dorsocentrals 4–5, 4; acrostichals 2, scalpellate; prealars 1–2, 1; supraalar absent. Scutellum with 2 setae.

Wing (Fig. 151). Wing cuneiform. Cu_1 curved. R_{4+5} ending proximal to apex of M_{3+4} . VR 1.23–1.82. Costal extension 30–93, 74 μm long. Brachiolum with 1 seta, other veins bare.

Legs. Spur of fore tibia 19–36, 27 μm long, spurs of mid tibia 9–11 μm and 8–9 μm long, of hind tibia 26–34, 31 μm and 9–15, 11 μm long. Width at apex of fore tibia 17–19, 18 μm , of mid tibia 15–18 μm , of hind tibia 15–25, 21 μm . Comb with 7–12, 10 setae; longest 19–27, 24 μm long, shortest 13–16, 15 μm long. Length and proportions of legs as in Table 19.

TABLE 19. Length (in μm) and proportions of legs of *Pseudosmittia nana* sp. n., male (n = 1–3).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
p ₁	175–281	222–292	104–151	83–94	36–54	19–25
p ₂	198–385	222–317	99–140	68–94	38–47	19–22
p ₃	222–310	213–306	123–166	74–79	61–76	19–26
	ta ₅	LR	BV	SV	BR	
p ₁	19–14	0.47–0.52	4.10–4.61	3.79–3.86	2.0–4.7	
p ₂	18–20	0.44–0.45	4.58–5.26	4.24–4.87	2.8–4.2	
p ₃	20–22	0.53–0.58	3.76–3.84	3.54–3.77	2.5–3.8	

Hypopygium (Figs 152–153). Anal point 1–14 μm long. Tergite IX with 2 or 4 setae. Laterosternite IX with 2 setae. Phallapodeme 31–54, 46 μm long. Sternapodeme with oral projections indicated; transverse sternapodeme 31–36, 35 μm long. Virga triangular, 9 μm long. Gonocoxite 81–102, 93 μm long. Inferior volsella with 6–8 μm wide, 8–11 μm long, digitiform anterior lobe, projecting caudad; posterior lobe low, rounded. Gonostylus 38–44, 42 μm long, with low, rounded apical crista dorsalis; megaseta 3–6, 5 μm long. HR 2.13–2.37, 2.22. HV 2.93–3.01.

Remarks. The presence of scalpellate acrostichals makes the placement in *Pseudosmittia* somewhat doubtful. However, in all other details the species resemble several other members of the genus.

Distribution and biology. The species was collected in Malaise traps in fragmented primary Mata Atlântica forests in São Paulo and Bahia States. In Bahia it was taken at about 100 m a.s.l., while in São Paulo above 800 m a.s.l.

Pseudosmittia palpina sp. n.

(Figs 154–159)

Pseudosmittia sp. 2 Pinho *et al.* (2009: 164).

Type material. Holotype male, **BRAZIL: Bahia State**, Estação Ecológica Pau Brasil, Porto Seguro, 16°23'17.6"S, 39°10'55.6"W, 17.v.2002, 107 m a.s.l., Malaise trap (Trilha 1), C.O. Azevedo *et al.* (BRPS09: BIOTA-FAPESP) (MZUSP).

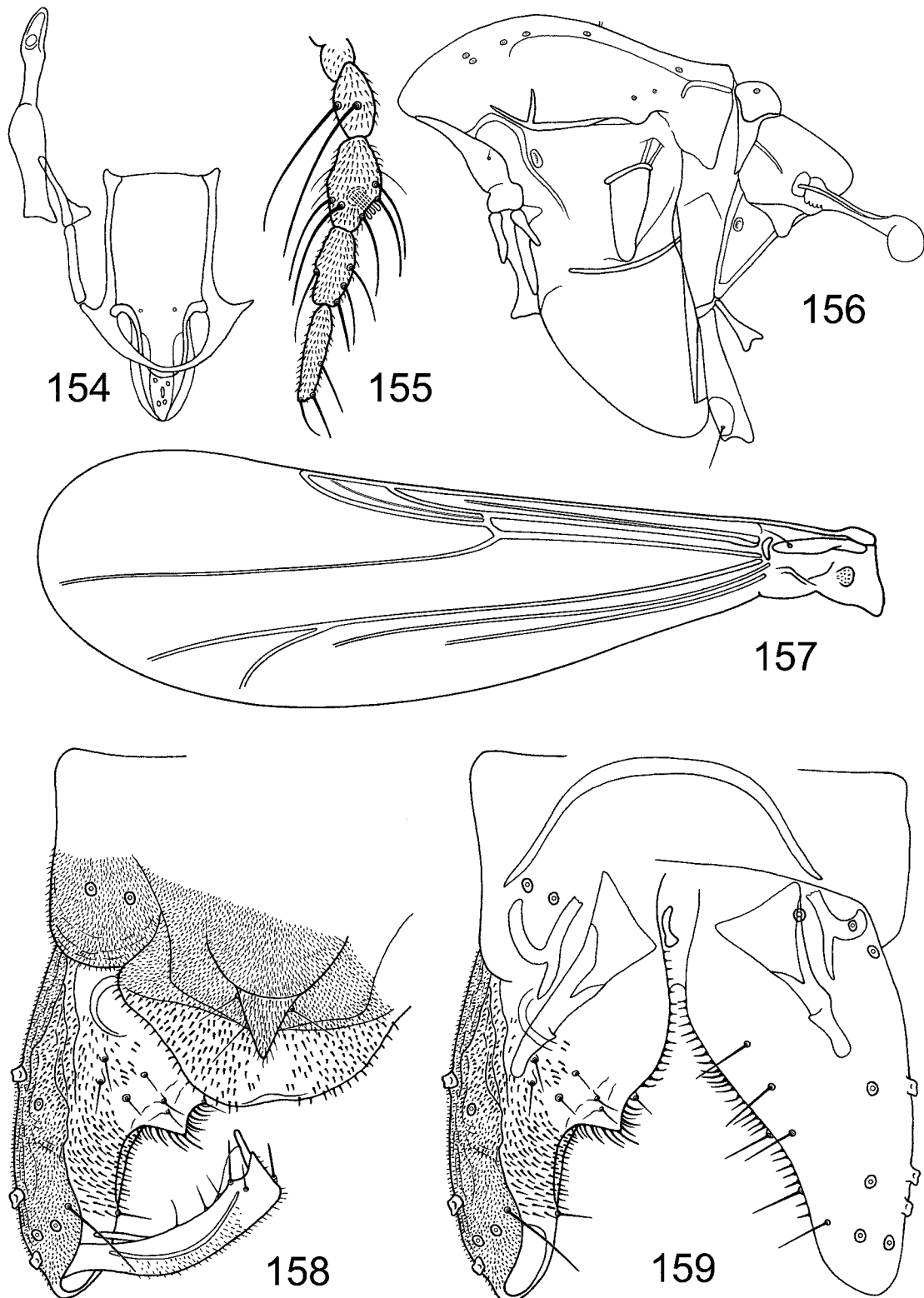
Diagnostic characters. The species differs from other members of the genus except *P. amorimi* sp. n. by having reduced palpomeres and unsclerotized transverse sternapodeme. It can be separated from *P. amorimi* sp. n. by having costa not extended and R_{4+5} ending proximal to apex of Cu_1 .

Etymology. From Latin, *palpus*, feeler, and the diminutive suffix *-ina*, referring to the reduced palp.

Male (n = 1). Total length 1.29 mm. Wing length 0.66 mm. Total length / wing length 1.94. Wing length / length of profemur 2.75.

Coloration. Thorax and abdomen brown, legs pale brown.

Head. AR 1.23, ultimate flagellomere 278 μm long. Temporal setae 4, including 1 inner vertical and 3 outer verticals. Clypeus with 4 setae. Tentorium, stipes and cibarial pump as in Figure 154. Tentorium 71 μm long, 11 μm wide. Stipes 60 μm long. Palpomere (Fig. 155) lengths (in μm): 15, 23, 26, 23, 26. Third palpomere with 5 lanceolate sensilla clavata, longest 10 μm long.



FIGURES 154–159. *Pseudosmittia palpina* sp. n., male. **154**—tentorium, stipes, and cibarial pump; **155**—palp; **156**—thorax; **157**—wing; **158**—hypopygium, dorsal aspect; **159**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Thorax (Fig. 156). Median anteprenotal lobes reduced; anteprenotum with 1 lateral seta. Dorsocentrals 6, acrostichals 2, prealars 2, supraalar absent. Scutellum with 2 setae.

Wing (Fig. 157). Wing cuneiform. Cu_1 curved. R_{4+5} ending far proximal to apex of Cu_1 . VR 1.65. Costa not extended. Brachiolum with 1 seta, other veins bare.

Legs. Spur of fore tibia 23 μ m long, spurs of mid tibia 15 μ m and 13 μ m long, of hind tibia 26 μ m and 11 μ m long. Width at apex of fore tibia 15 μ m, of mid tibia 19 μ m, of hind tibia 23 μ m. Comb with 10 setae, longest 20 μ m long, shortest 11 μ m long. Length and proportions of legs as in Table 20.

TABLE 20. Length (in μ m) and proportions of legs of *Pseudosmittia palpina* sp. n., male (n = 1).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
p ₁	241	234	142	66	47	28	24	0.52	3.97	3.63	2.0
p ₂	279	293	132	66	47	28	24	0.45	4.26	4.32	–
p ₃	265	293	–	–	–	–	–	–	–	–	–

Hypopygium (Figs 158–159). Anal point broadly triangular, 24 μ m long, 28 μ m wide at base, with 3 setae. Tergite IX with no additional setae. Laterosternite IX with 2 setae. Phallapodeme 45 μ m long. Transverse sternapodeme not sclerotized. Virga 19 μ m long. Gonocoxite 102 μ m long. Superior volsella, if regarded as present, consisting of bulge of inner margin of gonocoxite with stout orally curved microtrichia, extending to 0.51 of gonocoxite. Inferior volsella with triangular, about 8 μ m long anterior lobe, with fringe of microtrichia. Gonostylus 55 μ m long, with large, bluntly triangular apical crista dorsalis; megaseta 7 μ m long. HR 1.87.

Distribution and biology. The single specimen was collected in a Malaise trap at an altitude of about 100 m a.s.l. in a fragment primary Mata Atlântica forest in Bahia State, Brazil.

Pseudosmittia paulista sp. n.

(Figs 160–166)

Type material. Holotype male, **BRAZIL: São Paulo State**, Estação Ecológica Juréia-Itatins, Peruíbe, 24°31'06"S, 47°12'06"W, 3.v.2002, Malaise trap (Trilha 1), N.W. Perioto *et al.* (PEJU17: BIOTA-FAPESP) (MZUSP). Paratype: 1 male, same as holotype (ZMBN).

Diagnostic characters. The species differs from other Neotropical members of the genus by having palpomeres not reduced, third palpomere with 13–14 sensilla clavata, R_{4+5} ending distal to apex of M_{3+4} , anal point narrowly triangular with conspicuous microtrichia and penis cavity sclerotized.

Etymology. From Portuguese, *paulista*, meaning native from São Paulo State, referring to the State where the specimens were collected. The name is to be treated as a noun in apposition.

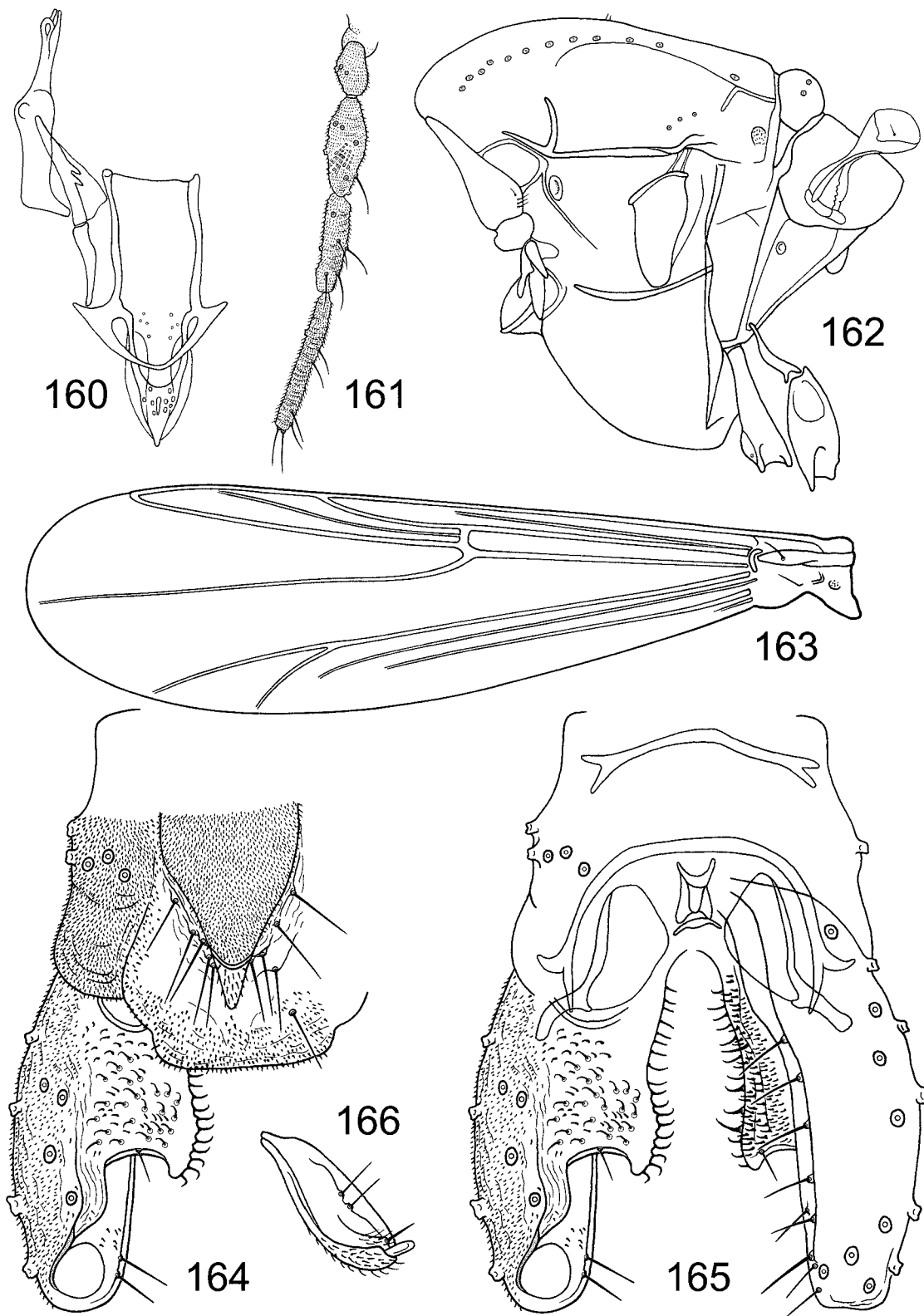
Male (n = 1–2). Total length 1.57–1.59 mm. Wing length 0.86–0.88 mm. Total length / wing length 1.82. Wing length / length of profemur 2.88–2.94.

Coloration. Thorax and abdomen brown, legs pale brown.

Head. AR 1.22–1.23, ultimate flagellomere 320–346 μ m long. Temporal setae 6, including 4 inner verticals and 2 outer verticals. Clypeus with 8–9 setae. Tentorium, stipes and cibarial pump as in Figure 160. Tentorium 73–86 μ m long, 14–16 μ m wide; stipes 49–91 μ m long. Palpomere (Fig. 161) lengths (in μ m): 13–16, 27–30, 50–54, 61, 75. Third palpomere with 13–14 lanceolate sensilla clavata, longest 8 μ m long.

Thorax (Fig. 162). Median anteprenotal lobes reduced; anteprenotum with 2–3 lateral setae. Dorsocentrals 9–12, acrostichals 2, prealars 3, supraalar absent. Scutellum with 4 setae.

Wing (Fig. 163). Wing cuneiform. Cu_1 slightly curved. R_{4+5} ending distal to apex of M_{3+4} . VR 1.26–1.42. Costa not extended. Brachiolum with 1 seta, other veins bare.



FIGURES 160–166. *Pseudosmittia paulista* sp. n., male. **160**—tentorium, stipes, and cibarial pump; **161**—palp; **162**—thorax; **163**—wing; **164**—hypopygium, dorsal aspect; **165**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; **166**—gonostylus.

Legs. Spur of fore tibia 32–43 μm long, spurs of mid tibia 27 μm and 18 μm long, of hind tibia 25–41 μm and 12–20 μm long. Width at apex of fore tibia 20 μm , of mid tibia 18 μm , of hind tibia 24 μm . Comb with 10–11 setae, longest 25–32 μm long, shortest 18–20 μm long. Length and proportions of legs as in Table 21.

TABLE 21. Length (in μm) and proportions of legs of *Pseudosmittia paulista* sp. n., male ($n = 1-2$).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
P ₁	302–313	346–356	–	–	–	–	–	–	–	–	–
P ₂	263	295	–	–	–	–	–	–	–	–	–
P ₃	277–374	313–389	151–230	–	–	–	–	0.48–0.59	–	3.31–3.90	5.4

Hypopygium (Figs 164–166). Anal point narrowly triangular, 13–15 μm long, 6–8 μm wide at base, with 2–3 setae at base. Tergite IX with 8–12 additional setae. Laterosternite IX with 4–5 setae. Phallapodeme 48 μm long. Sternapodeme without oral projections, transverse sternapodeme about 45 μm long. Virga 14–20 μm long; penis cavity sclerotized. Gonocoxite 111–118 μm long. Inferior volsella with short rounded apex projecting caudad, reaching to about 0.66 of gonocoxite length, with fringe of stout curved microtrichia. Gonostylus 47–54 μm long, crista dorsalis indicated; megaseta 6–8 μm long. HR 2.04–2.48. HV 2.89–3.34.

Distribution and biology. Two specimens were collected in a Malaise trap in a primary lowland Mata Atlântica forest in São Paulo State, Brazil.

Pseudosmittia pinhoi sp. n.

(Figs 167–173)

Type material. Holotype male, **BRAZIL: Santa Catarina State**, Urubici, Morro da Igreja, cloud forest, 1.822 m a.s.l., 18.ix.–05.xii.2004, Malaise trap, L.C. Pinho & L.E.M. Bizzo (MZUSP).

Diagnostic characters. The species groups with *P. windwardensis* in having virga not plate-like, without lateral lamella, R₄₊₅ ending proximal to M₃₊₄ and palpomeres not reduced; it can be separated from *P. windwardensis* in having inferior volsella not placed posterior on gonocoxite.

Etymology. Named after Luis C. de Pinho, who collected the specimen.

Male ($n = 1$). Total length 1.85 mm. Wing length 1.25 mm. Total length / wing length 1.48. Wing length / length of profemur 2.89.

Coloration. Thorax, abdomen and legs pale brown.

Head. AR 0.84, ultimate flagellomere 292 μm long. Temporal setae 8, including 5 inner verticals and 3 outer verticals. Clypeus with 4 setae. Tentorium, stipes and cibarial pump as in Figure 167. Tentorium 107 μm long, 18 μm wide. Stipes 102 μm long. Palpomere (Fig. 168) lengths (in μm): 14, 32, 73, 78, 102. Third palpomere with 10 lanceolate sensilla clavata, longest 14 μm long.

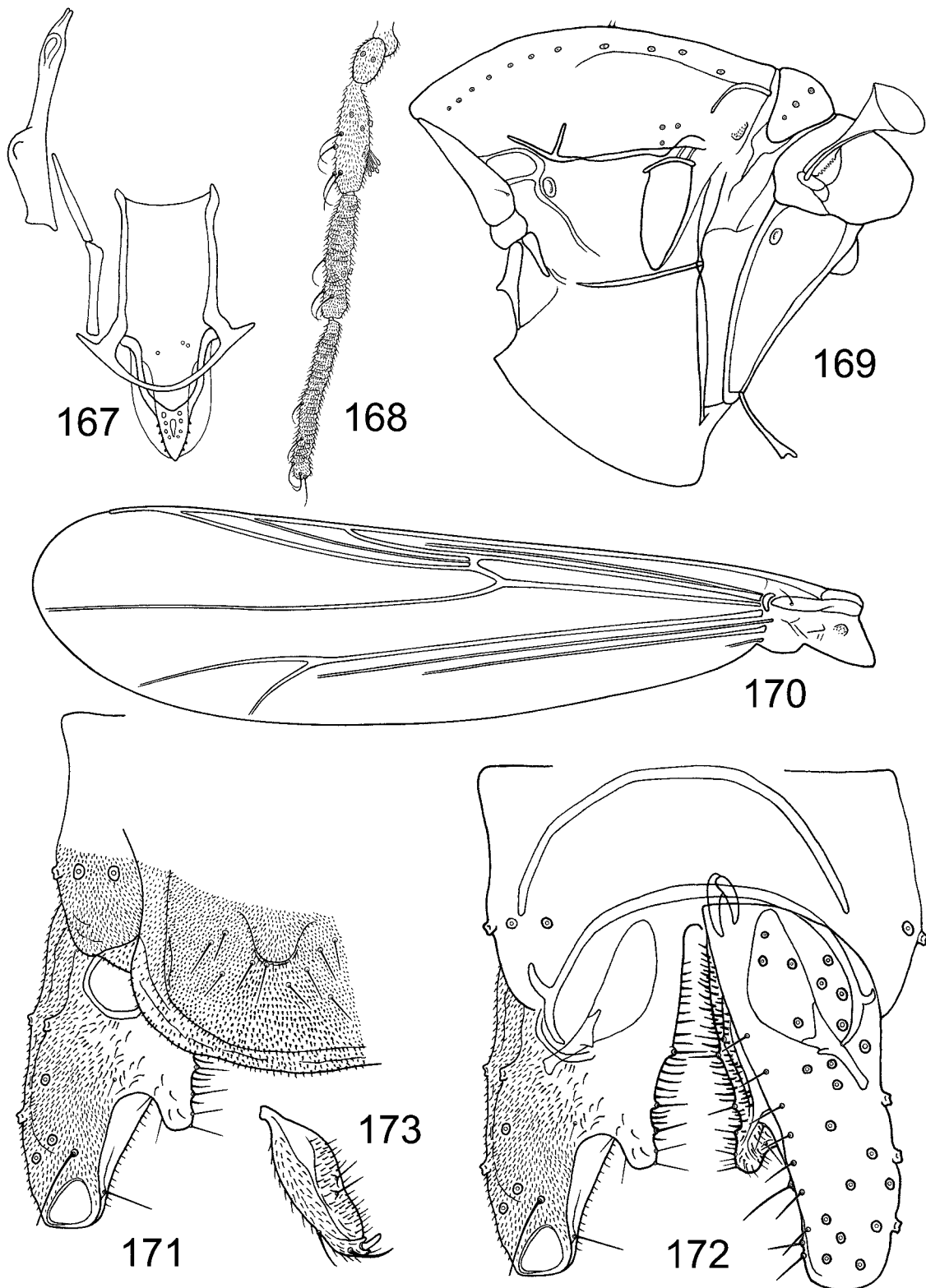
Thorax (Fig. 169). Median antepnotal lobes reduced; antepnotum with 1 lateral seta. Dorsocentrals 11, acrostichals 2, prealars 3, supraalar absent. Scutellum with 6 setae.

Wing (Fig. 170). Wing with weak anal lobe. Cu₁ curved. R₄₊₅ ending proximal to apex of M₃₊₄. VR 1.67. Costal extension 57 μm long. Brachiolum with 1 seta, other veins bare.

Legs. Spur of fore tibia 42 μm long, mid leg lost, spurs of hind tibia 43 μm and 23 μm long. Width at apex of fore tibia 27 μm , of hind tibia 34 μm . Comb with 12 setae, longest 13 μm long, shortest 27 μm long. Length and proportions of legs as in Table 22.

TABLE 22. Length (in μm) and proportions of legs of *Pseudosmittia pinhoi* sp. n., male ($n = 1$).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
P ₁	461	490	245	162	117	65	47	0.50	3.06	3.88	3.1
P ₂	–	–	–	–	–	–	–	–	–	–	–
P ₃	508	526	302	154	144	70	43	0.57	3.24	3.42	4.0



FIGURES 167–173. *Pseudosmittia pinhoi* sp. n., male. **167**—tentorium, stipes, and cibarial pump; **168**—palp; **169**—thorax; **170**—wing; **171**—hypopygium, dorsal aspect; **172**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; **173**—gonostylus.

Hypopygium (Figs 171–173). Anal point barely indicated, with 1 seta at base. Tergite IX with 9 additional setae. Laterosternite IX with 3 setae. Phallapodeme 84 μ m long. Sternapodeme evenly rounded, without oral projections, arched part about 70 μ m long. Virga consisting of 2 stout spines, 18 μ m long, without lateral lamellae. Gonocoxite 138 μ m long. Inferior volsella with subrectangular apex projecting caudad, reaching to

0.66 of gonocoxite length, with few marginal setae. Gonostylus 59 μm long; crista dorsalis barely indicated; megaseta 6 μm long. HR 2.35. HV 3.13.

Distribution and biology. The single specimen was collected at an altitude of about 1.800 m a.s.l. in a fragmented primary cloud forest belonging to the Mata Atlântica forest in Santa Catarina State, Brazil. The specimen was taken in a Malaise trap close to a small stream.

***Pseudosmittia roquei* sp. n.**

(Figs 174–180)

Material examined. Holotype male, **BRAZIL: Minas Gerais State**, Monte Verde, Camanducaia, 20.viii.2004, F.O. Roque (MZUSP). Paratypes: 2 males, **São Paulo State**, Usina Santa Isabel, Campos do Jordão, 27.ix.2002, A.P. Dias *et al.* (ZMBN). 6 males, **Santa Catarina State**, Urubici, Morro da Igreja, cloud forest, 1.822 m a.s.l., 18.ix.–05.xii.2004, Malaise trap, L.C. Pinho & L.E.M. Bizzo (MZUSP, ZMBN).

Diagnostic characters. The male imago can be separated from other Neotropical species with bifurcate gonostylus by the absence of an anal point.

Etymology. Named after Dr. Fabio O. Roque, who collected the holotype.

Male ($n = 7-9$, except when otherwise stated). Total length 1.46–1.78, 1.64 mm. Wing length 0.96–1.21, 1.11 mm. Total length / wing length 1.42–1.56, 1.50. Wing length / length of profemur 3.35–3.65, 3.50.

Coloration. Fully brown.

Head. AR 0.73–0.76 (specimens from Minas Gerais and São Paulo), 1.03–1.13, 1.07 (specimens from Santa Catarina). Ultimate flagellomere 233 μm long (holotype), 313–356, 339 (specimens from Santa Catarina). Temporal setae about 5–8, 6; consisting of 2–5, 4 inner verticals and 2–4, 3 outer verticals. Clypeus with 6–10, 8 (6) setae. Tentorium, stipes and cibarial pump as in Figure 174. Tentorium 94–107, 99 (6) μm long; 22–28, 24 (6) μm wide. Stipes 90–98, 92 μm long. Palpomere (Fig. 175) lengths (in μm): 10–14, 13; 25–36, 31; 56–82, 69 (6); 66–82, 73 (6); 84–98, 90 (5). Third palpomere with 2–3, 2 lanceolate sensilla clavata; longest 11–19, 15 μm long.

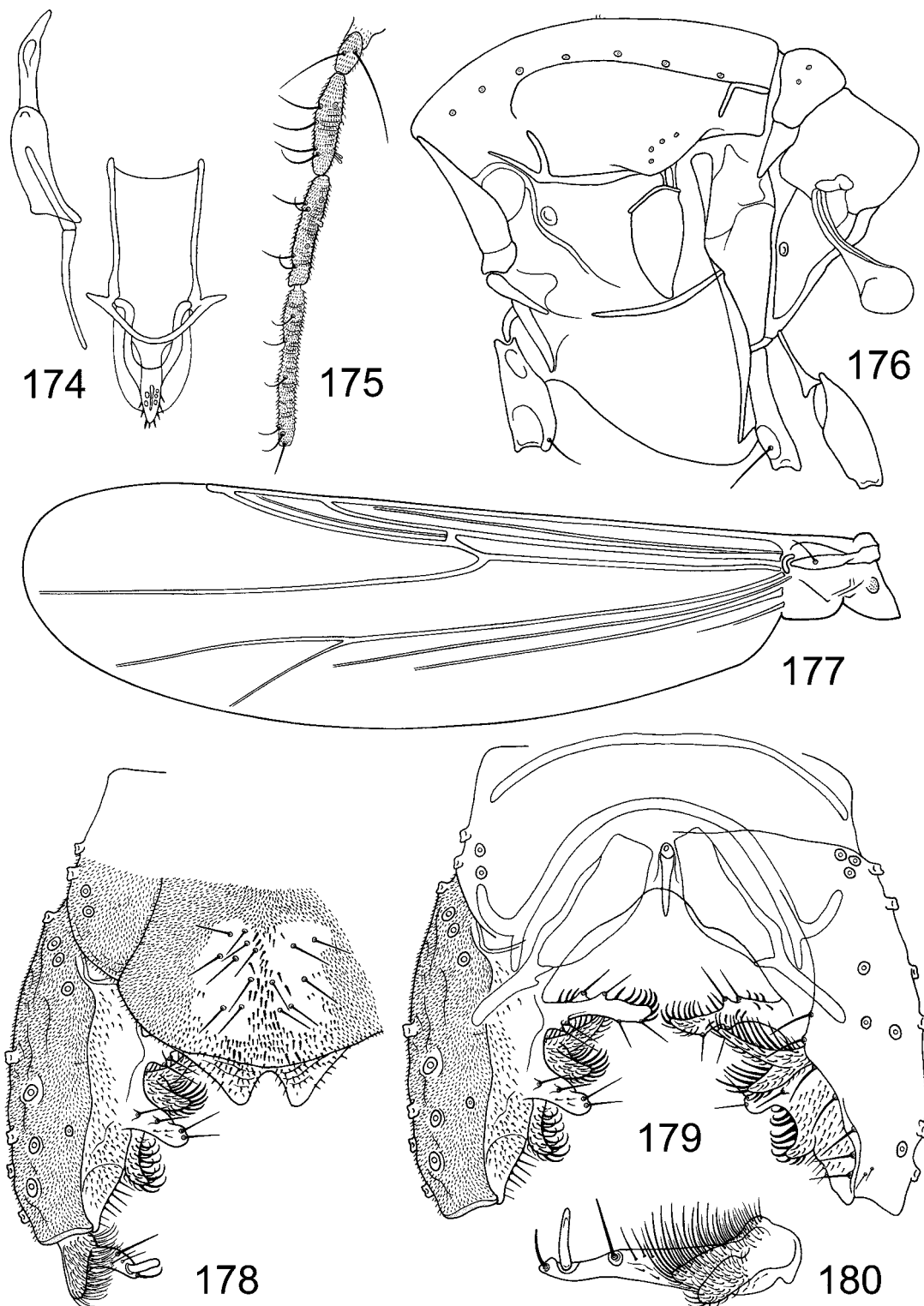
Thorax (Fig. 176). Median anteprenotal lobes reduced; anteprenotum with 0–1, 1 lateral seta. Dorsocentrals 7–11, 9; acrostichals 2; prealars 2–5, 4; supraalar 0–1, 0. Scutellum with 4–8, 6 setae.

Wing (Fig. 177). VR 1.47–1.58, 1.52. Anal lobe indicated. Costal extension 0–34, 11 μm long. R_{4+5} ending above apex of Cu_1 ; Cu_1 nearly straight. Brachiolum with 1 seta; R with 0–3, 2 setae; other veins bare.

Legs. Spur of fore tibia 29–38, 35 μm long; spurs of mid tibia 16–23, 18 (6) μm and 11–16, 14 (6) μm long; of hind tibia 32–38, 35 μm and 14–19, 16 μm long. Width at apex of fore tibia 19–23, 21 μm ; of mid tibia 19–25, 22 (6) μm ; of hind tibia 25–31, 28 μm . Comb of 11–13, 12 setae; longest 25–30, 27 μm long; shortest 14–19, 17 μm long. Length and proportions of legs as in Table 23.

TABLE 23. Length (in μm) and proportions of legs of *Pseudosmittia roquei* sp. n., male ($n = 3$).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
P ₁	284–349	383–428	151–166	57–76	38–58	30–33
P ₂	350–450	350–446	189–212	76–97	57–74	36–38
P ₃	331–432	350–450	198–254	95–117	95–108	28–47
	ta ₅	LR	BV	SV	BR	
P ₁	25–33	0.39–0.50	4.68–4.94	3.82–4.70	3.3–3.5	
P ₂	28	0.48–0.54	4.57–4.70	3.80–4.22	3.8–5.3	
P ₃	30–33	0.56–0.58	2.98–3.76	3.48–3.50	4.3–5.3	



FIGURES 174–180. *Pseudosmittia roquei* sp. n., male. **174**—tentorium, stipes, and cibarial pump; **175**—palp; **176**—thorax; **177**—wing; **178**—hypopygium, dorsal aspect; **179**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; **180**—gonostylus.

Hypopygium (Figs 178–180). Anal point absent. Tergite IX with 9–17, 14 setae. Laterosternite IX with 4–9, 6 setae. Phallapodeme 73–82, 77 μm long. Sternapodeme evenly rounded with no trace of oral projections, arched part about 38–59, 49 μm long. Virga triangular, 11–20, 17 μm long. Gonocoxite 119–141, 130 μm long. Superior volsella 32–35, 33 μm long, 6–9, 8 μm wide at base, with rounded to pointed apex, with few setae on tubercles medially, with anterior fringe of curved microtrichia. Median volsella double, both lobes

irregularly triangular, covered with microtrichia and with anterior fringe of strong microtrichia, dorsal lobe 24–33, 30 μm long; ventral lobe 23–28, 26 μm long. Inferior volsella with digitiform, 18–19, 18 μm long, 6–8, 7 μm wide anterior lobe, with few dorsal setae; median lobe 21–26, 23 μm long, 18–22, 20 μm wide, weakly curved with projecting apex, with dorsal, orally curved microtrichia and fringe of strong, curved microtrichia. Gonostylus 33–36 μm long (specimens from Minas Gerais and São Paulo), or 48–54, 50 μm long (specimens from Santa Catarina), tapering to apex; with 25–32, 38 μm long lateral lobe, with long, medially directed microtrichia; megaseta 6–12, 8 μm long. HR 3.33–3.64 (specimens from Minas Gerais and São Paulo), 2.42–2.82, 2.63 (specimens from Santa Catarina). HV 4.50–4.52 (specimens from Minas Gerais and São Paulo), 3.11–3.56, 3.35 (specimens from Santa Catarina).

Remarks. The specimens from Santa Catarina have higher antennal ratio, longer gonostylus and lower HR and HV than the specimens from São Paulo and Minas Gerais. The specimens from Santa Catarina were taken in a mountain area close to 1.900 m altitude, while the other specimens were taken at lower altitudes. As all specimens look identical, we considered them as belonging to the same species and ascribe the differences mentioned above to local variation most probably due to a longer life span at higher altitudes.

Distribution and biology. The species has been taken at rather high altitudes (above 1.000 m a.s.l.) in fragmented primary Mata Atlântica forests in São Paulo, Minas Gerais and Santa Catarina States. It was collected both with sweep nets and in Malaise traps.

Pseudosmittia tropis sp. n.

(Figs 181–187)

Pseudosmittia sp. 5 Pinho *et al.* (2009: 164).

Type material. Holotype male, **ECUADOR: Pastaza Province**, Puyo, Terminal Terrestre, 950 m a.s.l., 11.ii.1997, J. Skartveit (ZMBN Type No. 427). Paratypes: 7 males, **BRAZIL: São Paulo State**, Cajuru, Fazenda Rio Grande, 21°12'S, 47°09'W, 2–18.xiii.1999, Malaise trap (white), G. Melo & F. Nascimento (MZUSP, ZMBN); 1 male, Estação Ecológica Juréia-Itatins, Peruíbe, 24°31'06"S, 47°12'06"W, 6.v.2002, Malaise trap (Trilha 6), N.W. Perioto *et al.* (PEJU19: BIOTA-FAPESP) (ZMBN). 1 male, **Rio de Janeiro State**, Reserva Biológica Tinguá, Nova Iguaçu, 22°34'32"S, 43°26'07.6"W, 8–11.iii.2002, Malaise trap (Bosque 3), S.T.P. Amarante *et al.* (BRTIN18: BIOTA-FAPESP) (ZMBN). 1 male, **Amazonas State**, Manaus, Reserva Soka Gakkai (lago), 12–14.ii.2008, Pennsylvania trap, N. Hamada *et al.* (INPA).

Diagnostic characters. The species differs from other members of the genus except *P. lamellata* sp. n. by having a long virga with lateral lamellae. It differs from *P. lamellata* by having a long gonostylus with outer corner.

Etymology. From Latin, *tropis*, keel, referring to the large crista dorsalis.

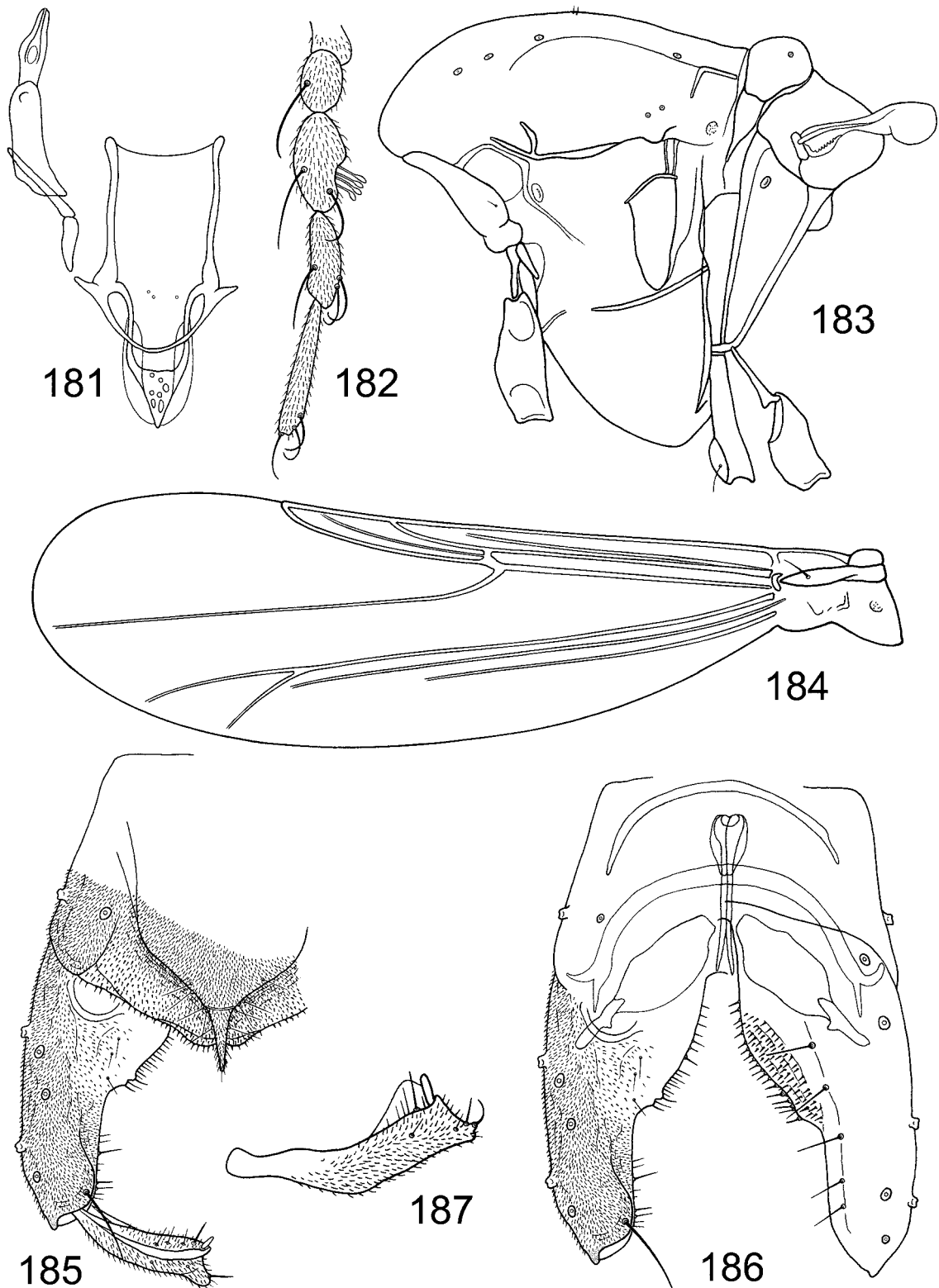
Male (n = 7–9, except when otherwise stated). Total length 1.09–1.56, 1.29 mm. Wing length 0.61–0.82, 0.72 mm. Total length / wing length 1.70–1.90, 1.80. Wing length / length of profemur 2.79–3.35, 3.04 (4).

Coloration. Brown.

Head. Ultimate flagellomeres 11–13 partially fused; when considered with 13 flagellomeres AR 0.58–0.92, 0.77; ultimate flagellomere 158–272, 212 μm long; when considered with 11 flagellomeres AR 0.89–1.29 (2); ultimate flagellomere 209–299 (2) μm long. Temporal setae 1–5, 3; consisting of 0–3, 2 inner verticals and 1–3, 2 outer verticals. Clypeus with 4–6, 5 setae. Tentorium, stipes and cibarial pump as in Figure 181. Tentorium 79–102, 86 μm long; 9–18, 11 μm wide. Stipes 60–73 (3) μm long, 23 (1) μm wide. Palpomere (Fig. 182) lengths (in μm): 9–15, 12; 14–23, 18; 26–32, 28; 16–30, 25; 23–45, 39. Third palpomere with 4–7, 6 lanceolate sensilla clavata; longest 10–14, 11 (5) μm long.

Thorax (Fig. 183). Median antepnotal lobes reduced; antepnotum with 0–2, 1 lateral seta. Dorsocentrals 3–6, 5; acrostichals 2; prealars 1–4, 2; supraalar absent. Scutellum with 2–4, 2 setae.

Wing (Fig. 184). VR 1.71–1.86, 1.80 (6). Anal lobe absent. Cu_1 weakly curved. R_{4+5} ending proximal to apex of Cu_1 . Costa not extended. Brachiolum with 1–2, 1 seta, other veins bare.



FIGURES 181–187. *Pseudosmittia tropis* sp. n., male. **181**–tentorium, stipes, and cibarial pump; **182**–palp; **183**–thorax; **184**–wing; **185**–hypopygium, dorsal aspect; **186**–hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; **187**–gonostylus.

Legs. Spur of fore tibia 24–31, 27 (5) μm long; spurs of mid tibia 10–15, 12 (6) μm and 9–11, 10 (6) μm long; of hind tibia 20–33, 28 μm and 10–16, 13 μm long. Width at apex of fore tibia 14–18, 17 μm ; of mid tibia 15–19, 17 μm ; of hind tibia 20–26, 23 μm . Comb with 10–12, 11 setae; longest 23–29, 26 μm long; shortest 11–18, 13 μm long. Length and proportions of legs as in Table 24.

TABLE 24. Length (in μm) and proportions of legs of *Pseudosmittia tropis* sp. n., male (n = 1–2).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
P ₁	246–248	281–302	122–142	43–61	32–42	22–28
P ₂	266–312	288–340	151–161	68–85	50–57	25–38
P ₃	290–302	310–321	166–184	76–90	76–85	29–38
	ta ₅	LR	BV	SV	BR	
P ₁	22–28	0.43–0.47	4.17–5.49	3.87–4.32	2.6	
P ₂	25–28	0.47–0.52	3.91–4.26	3.67–4.06	–	
P ₃	22–28	0.53–0.57	3.35–3.79	3.38–3.62	3.2	

Hypopygium (Figs 185–187) (n = 11). Anal point 14–26, 17 μm long; 7–12, 8 μm wide at base, with 4–6, 4 weak setae. Tergite IX with 2–7, 5 additional weak setae. Laterosternite IX with 2–3, 2 setae. Phallapodeme 43–55, 49 μm long. Sternapodeme evenly rounded without oral projections, arched part about 38–55, 48 μm long. Virga consisting of 2 spines, 36–48, 42 μm long; with lateral lamellae. Gonocoxite 75–100, 91 μm long. Superior volsella, if regarded as present, consisting of bulge of inner margin of gonocoxite. Inferior volsella weak, adpressed, reaching to 0.62 of gonocoxite length. Gonostylus 39–50, 43 μm long, with outer corner produced, with large, bluntly triangular apical crista dorsalis; megaseta 3–6, 4 μm long. HR 1.83–2.50, 2.12. HV 2.54–3.29, 3.01 (9).

Distribution and biology. Taken in Ecuador and in São Paulo, Rio de Janeiro and Amazonas States in Brazil. In Brazil it was collected in Malaise traps in lowland areas with fragmented Mata Atlântica forest in São Paulo and Rio de Janeiro States, as well as in a Pennsylvania trap in the Amazon forest in Amazonas State. In Ecuador it was netted in herbaceous vegetation at about 950 m altitude near the bus terminal in Puyo.

Pseudosmittia umbonata sp. n.

(Figs 188–194)

Type material. Holotype male, **BRAZIL: São Paulo State**, Estação Ecológica Jurúia-Itatins, Peruíbe, 24°31'06"S, 47°12'06"W, 3.v.2002, Malaise trap (Bosque 6), N.W. Perioto *et al.* (PEJU03: BIOTA-FAPESP) (MZUSP). Paratypes: 3 males, as holotype except 6.v.2002, Malaise trap (Trilha 1), (PEJU11: BIOTA-FAPESP)(ZMBN); 1 male, as holotype except (PEJU17: BIOTA-FAPESP) (MZUSP).

Diagnostic characters. The species differ from *P. gibbistyla* by having a simple median volsella, inferior volsella with low, rounded anterior lobe, short anal point and a wing length of about 0.9 mm.

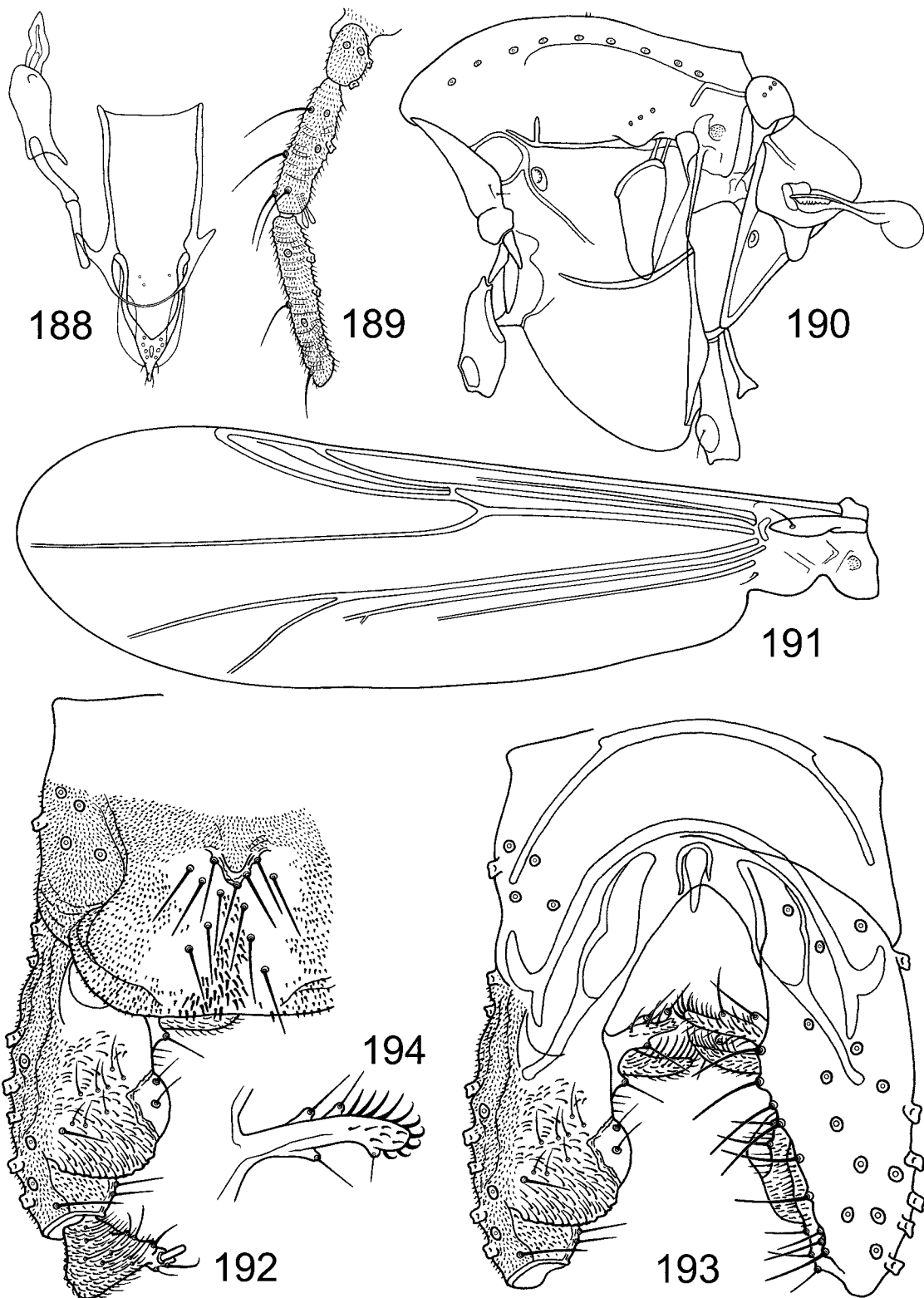
Etymology. From Latin, *umbo*, knob, shield and *-atus*, equipped with, referring to the shape of the anterior lobe of inferior volsella.

Male (n = 3–5, except when otherwise stated). Total length 1.29–1.53, 1.42 mm. Wing length 0.80–0.93, 0.87 mm. Total length / wing length 1.56–1.66, 1.60. Wing length / length of profemur 3.16–3.48.

Coloration. Fully brown.

Head. AR 0.84–1.03, 0.95. Ultimate flagellomere 241–281, 262 μm long. Temporal setae 6–7, 6; consisting of 3–4, 4 weak inner verticals and 2–3, 3 stronger outer verticals. Clypeus with 8–11, 9 setae. Tentorium, stipes and cibarial pump as in Figure 188. Tentorium 75–95, 86 μm long; 14–16, 15 μm wide. Stipes 78–82, 80 μm long. Palpomere (Fig. 189) lengths (in μm): 11–15, 13; 20–27, 24; 50–57, 53; 64–68, 65; fifth palpomere lost. Third palpomere with 2–3, 2 lanceolate sensilla clavata; longest 9–15, 12 μm long.

Thorax (Fig. 190). Median antepnotal lobes reduced; antepnotum with 1–2, 1 lateral seta. Dorsocentrals 8–11, 9; acrostichals 2; prealars 3–4, 3; supraalar absent. Scutellum with 5–6, 6 setae.



FIGURES 188–194. *Pseudosmittia umbonata* sp. n., male. **188**—tentorium, stipes, and cibarial pump; **189**—palpomere 1–4; **190**—thorax; **191**—wing; **192**—hypopygium, dorsal aspect; **193**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right; **194**—superior volsella, dorsal view.

Wing (Fig. 191). VR 1.53–1.59, 1.56. VR₁ 1.41 (1). Anal lobe weak. Costal extension 0–34 µm long. R₄₊₅ ending slightly distal to apex of Cu₁. Cu₁ weakly sinuous. Brachiolum with 1 seta, other veins bare.

Legs. Spur of fore tibia 25–41, 33 µm long; spurs of mid tibia 18 (1) µm and 14 (1) µm long; of hind tibia 36–41, 38 µm and 18–20, 19 µm long. Width at apex of fore tibia 17–19, 18 µm; of mid tibia 23 µm; of hind

tibia 26–29, 27 μm . Comb of 11–12, 11 setae; longest 25–30, 27 μm long; shortest 15–19, 17 μm long. Length and proportions of legs as in Table 25.

TABLE 25. Length (in μm) and proportions of legs of *Pseudosmittia umbonata* sp. n., male (n = 1–3).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
P ₁	263–295	310–331	–	–	–	–	–	–	–	–	–
P ₂	349	338	–	–	–	–	–	–	–	–	–
P ₃	331–346	346–371	194–198	95	99	38	33	0.55–0.59	3.36	3.48–3.70	6.5

Hypopygium (Figs 192–194). Anal point indicated. Tergite IX with 10–22, 16 setae. Laterosternite IX with 4–6, 5 setae. Phallapodeme 59–77, 71 μm long. Sternapodeme evenly rounded with no trace of oral projections, arched part about 45–52, 49 μm long. Virga triangular, 16–23, 20 μm long. Gonocoxite 95–127, 113 μm long. Superior volsella digitiform, 28–31, 30 μm long, 6–8, 7 μm wide at base, with few tubercles with apical setae, with anterior fringe of microtrichia. Median volsella simple, subtriangular, 22–28, 24 μm long, 7–8, 8 μm wide at base, with microtrichia and anterior fringe. Inferior volsella 12–15, 14 μm long, 19–26, 22 μm wide, with rounded anterior lobe, with few dorsal setae; median lobe rounded to subquadrangular, 25–30, 28 μm long, with numerous orally curved microtrichia. Gonostylus 25–31, 27 μm long, tapering to apex; with about 21 μm long, 19 μm high lateral lobe partly fused with gonostylus, with medially directed microtrichia; megaseta 9–11, 10 μm long. HR 3.85–4.61, 4.18. HV 5.11–5.86, 5.37.

Distribution and biology. The species was collected in Malaise traps in a lowland primary Mata Atlântica forest in São Paulo State, Brazil.

Pseudosmittia uncata sp. n.

(Figs 195–200)

Pseudosmittia sp. 1 Pinho *et al.* (2009: 164).

Material examined. Holotype male, **BRAZIL: Paraná State**, Ponta Grossa, Fazenda Paiquerê, 8.ii.2002, Malaise trap, E.A. Nascimento (MZUSP). Paratypes: 8 males, as holotype (MZUSP, ZMBN). 2 males, **Santa Catarina State**, São Bento do Sul, 26°19'25.6"S, 48°18'26.5"W, 660 m a.s.l., 13–16.x.2001, Malaise trap, A.P. Dias *et al.* (MZUSP, ZMBN).

Diagnostic characters. The male can be separated from other Neotropical species with bifurcate gonostylus by having the curved secondary lobe of the gonostylus about as long as the main lobe and by the tapering, curved dorsal lobe of median volsella which has microtrichia in basal half and is bare and strongly sclerotized in apical half.

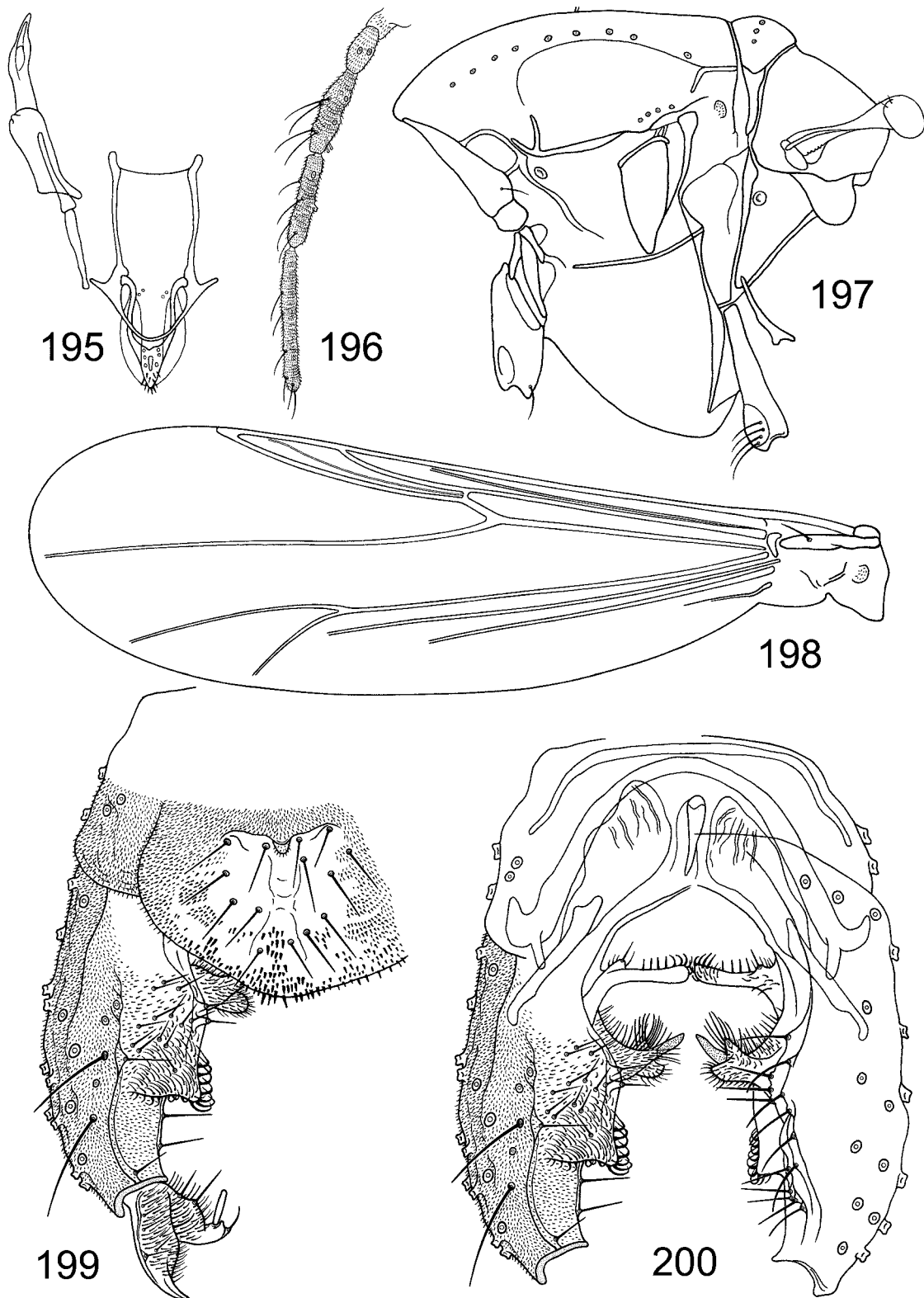
Etymology. From Latin, *uncus*, hook, and *-atus*, equipped with, referring to the lobe on the gonostylus.

Male (n = 8–11, except when otherwise stated). Total length 1.33–1.68, 1.50 mm. Wing length 0.83–0.98, 0.90 mm. Total length / wing length 1.46–1.90, 1.63 (7). Wing length / length of profemur 3.08–3.22, 3.16 (5).

Coloration. Fully brown.

Head. AR 0.75–0.99, 0.83. Ultimate flagellomere 230–288, 256 μm long. Temporal setae 5–8, 6; consisting of 3–5, 3 weak inner verticals; 2–3, 2 strong outer verticals and 0–1, 0 postorbitals. Clypeus with 5–9, 8 setae. Tentorium, stipes and cibarial pump as in Figure 195. Tentorium 68–98, 90 μm long; 13–19, 16 μm wide. Stipes 81–98, 86 μm long, 34 (1) μm wide. Palpomere (Fig. 196) lengths (in μm): 13–18, 16; 23–34, 28; 40–63, 55 (5); 52–68, 61 (5); 68–90 (3). Third palpomere with 2–4, 3 lanceolate sensilla clavata; longest 11–15, 13 μm long.

Thorax (Fig. 197). Median anteprenotal lobes reduced; anteprenotum with 1 lateral seta. Dorsocentrals 7–10, 8; acrostichals 2; prealars 3–4, 3; supraalar absent. Scutellum with 4–7, 6 setae.



FIGURES 195–200. *Pseudosmittia uncata* sp. n., male. **195**—tentorium, stipes, and cibarial pump; **196**—palp; **197**—thorax; **198**—wing; **199**—hypopygium, dorsal aspect; **200**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

Wing (Fig. 198). VR 1.40–1.67, 1.51 (7). Anal lobe reduced. Costal extension 7–34, 20 μ m long. R_{4+5} ending slightly distal to apex of Cu_1 . Cu_1 weakly curved. Brachiolum with 1 seta, other veins bare.

Legs. Spur of fore tibia 23–39, 34 μm long; spurs of mid tibia 18–23, 20 (6) μm and 11–16, 14 μm long; of hind tibia 32–43, 37 (6) μm and 11–18, 16 (6) μm long. Width at apex of fore tibia 16–23, 19 μm ; of mid tibia 18–23, 21 (6) μm , of hind tibia 24–30, 27 (7) μm . Comb of 10–11, 11 (7) setae; longest 25–32, 29 (7) μm long; shortest 11–18, 16 (7) μm long. Length and proportions of legs as in Table 26.

TABLE 26. Length (in μm) and proportions of legs of *Pseudosmittia uncata* sp. n., male (n = 1–3).

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄
P ₁	284–349	340–359	151–158	61–72	38–58	29
P ₂	340–359	359–387	180	85	66	38
P ₃	340–378	369–407	198–212	95–108	95–97	38–43
	ta ₅	LR	BV	SV	BR	
P ₁	25	0.45–0.46	4.65	4.13–4.39	2.8	
P ₂	28	0.46	2.61	4.26	–	
P ₃	28–33	0.52–0.55	3.51–3.65	3.49–3.69	4.7	

Hypopygium (Figs 199–200). Anal point 6–9, 7 μm long. Tergite IX with 10–15, 13 setae. Laterosternite IX with 4–6, 5 setae. Phallapodeme 72–84, 77 μm long; apodeme lobe with about 5 weak wrinkles. Sternapodeme evenly rounded with no trace of oral projections, arched part about 36–41, 39 μm long. Virga narrowly triangular, 18–29, 24 μm long. Gonocoxite 113–136, 124 μm long. Superior volsella 28–29, 29 μm long; 4–6, 5 μm wide at base; digitiform with bend at basal one-third, apex slightly clubbed, with few tubercles with apical setae, with fringe of microtrichia along anterior margin. Median volsella double, dorsal lobe 23–27, 24 μm long, 10–14, 12 μm wide at base, curved, tapering to pointed apex, with microtrichia in basal half, bare and strongly sclerotized in apical half; ventral lobe 20–24, 22 μm long, 6–8, 7 μm wide, with irregularly bilobed apex, strongly fringed with microtrichia. Inferior volsella with anterior lobe barely indicated, median lobe 17–22, 19 μm long, 22–25, 24 μm wide along posterior margin, with orally curved microtrichia and fringe of strong curved microtrichia. Gonostylus 25–32, 28 μm long; with 26–31, 29 μm long, curved, pointed, apically sclerotized lateral lobe, with long medially directed microtrichia in basal two-third; megaseta 7–11, 9 μm long. HR 4.00–4.73, 4.30. HV 4.35–5.53, 5.06.

Distribution and biology. The species was collected in Malaise traps in fragmented primary Mata Atlântica forests in Paraná and Santa Catarina States at altitudes varying from 100 m up to 900 m a.s.l.

Pseudosmittia windwardensis (Sæther)

(Figs 201–206)

Smittia windwardensis Sæther, 1981: 23.

Pseudosmittia windwardensis (Sæther); Pinho *et al.* (2009: 164).

Material examined. **SAINT VINCENT:** Majorca, Yambou River, 1.442 m a.s.l., below waterfall, holotype male, allotype female, 2 male paratypes, vii–viii.1972, Malaise trap, A.D. Harrison (ZMBN Type No. 31); Golden Grove, Yambou River, 7 males, vii.1972, A.D. Harrison. **BRAZIL: Santa Catarina State,** Urubici, Morro da Igreja, cloud forest, 1.822 m a.s.l., 2 males, 18.ix–05.xii.2004, Malaise trap, L.C. Pinho & L.E.M. Bizzo (ZMBN). **São Paulo State,** Estação Ecológica Juréia-Itatins, Peruíbe, 24°31'06"S, 47°12'06"W, 1 male, 3.v.2002, Malaise trap (Bosque 6), N.W. Perioto *et al.* (PEJU01: BIOTA-FAPESP); 2 males, same as previous except 6.v.2002, (PEJU08: BIOTA-FAPESP); 1 male, same as previous except Malaise trap (Trilha 1), (PEJU11: BIOTA-FAPESP); Parque Estadual Intervalos, Ribeirão Grande, Barra Grande, 24°15'S, 48°10'W, 1 male, 10–13.xii.2000, Malaise trap (Bosque 4), M.T. Tavares *et al.* (PEIN03: BIOTA-FAPESP); Estação Biológica Boracéia, Salesópolis, Trilha dos Pilões, 23°39'07"S, 45°53'41.8"W, 3 males, 2–5.iv.2001, Malaise trap

(Bosque 3), S.T.P. Amarante *et al.* (BORA11: BIOTA-FAPESP); 1 male, same as previous except 23°39'04.8"S, 45°53'41.8"W, 30.iii.–02.iv.2001, Malaise trap (Trilha 3), (BORA14: BIOTA-FAPESP); Parque Estadual Serra do Mar, Ubatuba, 23°21'43"S, 44°59'22"W, 1 male, 21.i.2002, Malaise trap (Bosque 9), N.W. Perioto *et al.* (BRUB13: BIOTA-FAPESP); 1 male, same as previous except Malaise trap (Bosque 8), (BRUB15: BIOTA-FAPESP); 2 males, same as previous except Malaise trap (Bosque 7), (BRUB16: BIOTA-FAPESP); 2 males, same as previous except 24.i.2002, Malaise trap (Trilha 4), (BRUB17: BIOTA-FAPESP) (MZUSP, ZMBN). **Rio de Janeiro State**, Reserva Biológica Tinguá, Nova Iguaçu, 22°34'37"S, 43°26'06.6"W, 1 male, 8–11.iii.2002, Malaise trap (Bosque 1), S.T.P. Amarante *et al.* (BRTIN07: BIOTA-FAPESP); 1 male, same as previous except 22°34'30"S, 43°26'07"W, Malaise trap (Trilha 4), (BRTIN12: BIOTA-FAPESP); 1 male, same as previous except 22°34'32"S, 43°26'07.6"W, Malaise trap (Bosque 3), (BRTIN18: BIOTA-FAPESP) (MZUSP, ZMBN). **Bahia State**, Reserva de Sapiranga, Mata de São João, 12°33'36.4"S, 38°02'57.2"W, 2 males, 19–22.vii.2001, Malaise trap (Bosque 3), M.T. Tavares *et al.* (BRBA4x: BIOTA-FAPESP); 3 males, same as previous except (BRBA5x: BIOTA-FAPESP); 2 males, same as previous except 11°22'39.6"S, 37°25'04.4"W, 22–25.vii.2001, Malaise trap (Trilha 1), (BRBA6x: BIOTA-FAPESP); 2 males, same as previous except 12°33'36.4"S, 38°02'57.2"W, Malaise trap (Bosque 3), (BRBA8x: BIOTA-FAPESP); 1 male, same as previous except 12°33'35.0"S, 38°02'48.8"W, 19–22.vii.2001, Malaise trap (Bosque 5), (BRBA10x: BIOTA-FAPESP) (MZUSP, ZMBN). **Paraná State**, Parque Estadual do Pau Oco, Morretes, 4 males, 10–13.iv.2002, Malaise trap (Trilha 2), M.T. Tavares *et al.* (BRPR34: BIOTA-FAPESP) (MZUSP, ZMBN). **COSTA RICA: Guanacaste Province**, Guanacaste Conservation Area, Cerro Cacao, Río San Josecito, 1.000 m a.s.l., 1 male, 3–7.v.1993, Malaise trap, T. Andersen. **Heredia Province**, La Selva Biological Station, 1 male, 16.iii.1993, Malaise trap, O.A. Sæther (ZMBN).

Diagnostic characters. The relatively long, narrow and curved inferior volsella combined with the triangular anal point will separate the male from other Neotropical members of the group. The female differs from other females with equally high VR and straight Cu_1 in having setae on tergite I and a costal extension nearly reaching wing apex.

Male (n = 10–12, except when otherwise stated). Total length 1.45–1.73, 1.63 mm. Wing length 0.85–1.06, 0.97 mm. Total length / wing length 1.54–1.74, 1.63 (5). Wing length / length of profemur 2.70–3.03, 2.82.

Coloration. Thorax dark brown with lighter scutellum, abdomen brown with paler anterior margins of tergites.

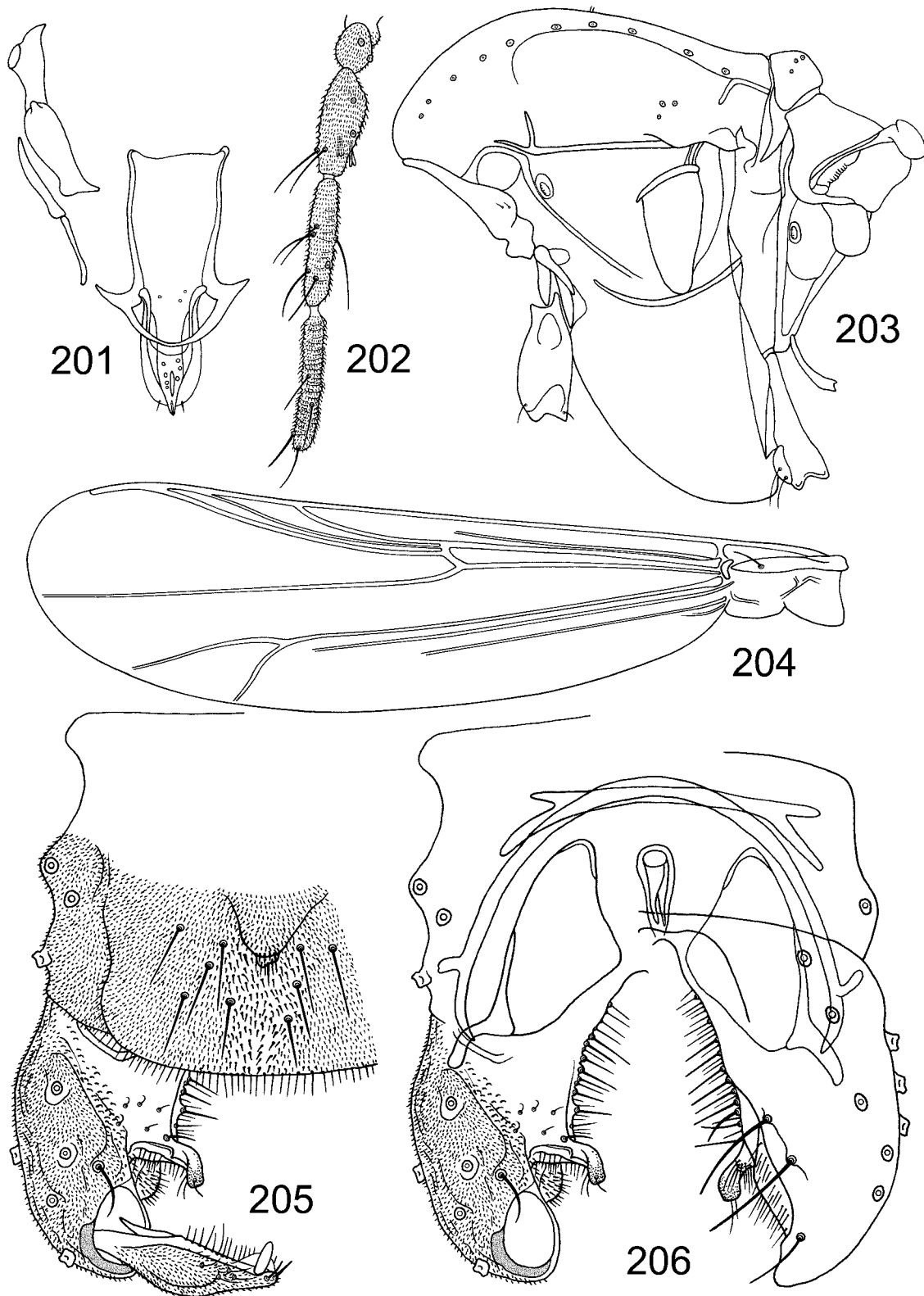
Head. AR 0.77–1.16, 1.01 (6); ultimate flagellomere 238–345, 308 (6) μm long; apical seta present in at least one specimen from Costa Rica, 32 μm long. Temporal setae 6–8, 7 including 3–4, 3 inner verticals and 2–4, 3 outer verticals. Clypeus with 4–8, 7 setae. Tentorium, stipes and cibarial pump as in Figure 201. Tentorium 70–104, 94 μm long; 18 (2) μm wide. Stipes 77–99, 90 μm long. Palpomere (Fig. 202) lengths (in μm): 11–23, 19; 20–27, 26; 43–57, 52; 40–74, 50; 45–116, 63 (8). Third palpomere with 7–13 (3) scalpellate sensilla clavata in one or two groups; longest 9–14, 12 μm long.

Thorax (Fig. 203). Median anteprenotal lobes reduced; anteprenotum with 1–2, 1 lateral seta. Dorsocentrals 9–12, 10; acrostichals 2; prealars 2–3, 3; supraalar absent. Scutellum with 5–7, 6 setae.

Wing (Fig. 204). Anal lobe absent. Cu_1 weakly sinuous. R_{4+5} ending distal to apex of Cu_1 . VR 1.65–1.79, 1.70. Costal extension 43–112, 83 μm long. Brachiolum with 1 seta, other veins bare.

Legs. Spur of fore tibia 36–52, 46 μm long; spurs of mid tibia 25–37, 31 (8) μm and 13–22, 18 (8) μm long; of hind tibia 28–49, 43 μm and 14–25, 20 (9) μm long. Width at apex of fore tibia 16–23, 18 μm ; of mid tibia 17–22, 18 μm ; of hind tibia 27–37, 33 μm . Comb with 12–13, 13 setae; longest 33–42, 38 μm long; shortest 15–26, 21 μm long. Length and proportions of legs as in Table 27.

Hypopygium (Figs 205–206). Anal point 7–35, 21 μm long. Tergite IX with 6–11, 9 setae. Laterosternite IX with 2–3, 3 setae. Phallapodeme 50–64, 57 μm long. Sternapodeme evenly rounded without trace of oral projections, arched part about 50–59 (3) μm long. Virga composed of 2 spines; 15–24, 18 μm long. Gonocoxite 93–126, 115 μm long. Inferior volsella well developed, hooked, reaching to 0.63–0.74, 0.69 (7) of gonocoxite length. Gonostylus 45–56, 51 μm long; with rounded apical crista dorsalis; megaseta 5–9, 7 μm long. HR 1.95–2.66, 2.25. HV 2.93–3.25, 3.08 (9).



FIGURES 201–206. *Pseudosmittia windwardensis* (Sæther, 1981), male. **201**—tentorium, stipes, and cibarial pump; **202**—palp; **203**—thorax; **204**—wing; **205**—hypopygium, dorsal aspect; **206**—hypopygium with anal point and tergite IX removed, dorsal aspect to the left, ventral aspect to the right.

TABLE 27. Length (in μm) and proportions of legs of *Pseudosmittia windwardensis* (Sæther), male (n = 3–6).

	fe	ti	ta ₁	ta ₂
P ₁	408–490, 448	372–546, 460	288–308, 296	164–196, 183
P ₂	390–572, 496	382–552, 480	232–276, 262	104–144, 120
P ₃	404–524, 453	440–574, 490	284–338, 309	136–172, 150
	ta ₃	ta ₄	ta ₅	LR
P ₁	116–136, 131	72–88, 78	48–56, 50	0.54–0.65, 0.57
P ₂	76–102, 94	44–72, 55	32–48	0.48–0.60, 0.56
P ₃	112–158, 132	52–84, 62	32–48, 41	0.56–0.66, 0.62
	BV	SV	BR	
P ₁	2.53–3.04, 2.66	2.69–3.58, 3.06	3.2–4.8	
P ₂	3.79–4.00	3.16–4.22, 3.71	3.1–3.2	
P ₃	3.04–3.61, 3.27	2.84–3.29, 3.04	4.6–5.4	

Female (n = 1). Total length 1.19 mm. Wing length 0.75 mm. Total length / wing length 2.00–2.16. Wing length / length of profemur 2.76.

Coloration. Thorax brown with lighter scutellum.

Head. Antenna lost. Temporal setae 6, consisting of 3 inner verticals and 3 outer verticals. Clypeus with 7 setae. Tentorium 72 μm long, 9 μm wide. Stipes 69 μm long. Palpomere lengths (in μm): 22, 23, 54, 49, 52. Third palpomere with 12 sensilla clavata. No coronal suture

Thorax. Median anteprenotal lobes reduced; anteprenotum with 1 lateral seta. Dorsocentrals 10, acrostichals 2, prealars 3, supraalar absent. Scutellum with 5 setae.

Wing. Anal lobe absent. Cu₁ nearly straight. R₄₊₅ ending distal to apex of Cu₁. VR 1.63. Postcubitus not forked. Costal extension 125 μm long, reaching to wing apex. Brachiolum with 1 seta, R with 7 setae, R₁ with 2, R₄₊₅ with 10, costa proximal to FR with 10 non-marginal setae, between FR and apex of R₄₊₅ with 30 non-marginal setae, costal extension with 23 non-marginal setae, other veins bare.

Legs. Mid leg and all tarsi lost. Fore femur 273 μm long, hind femur 324 μm long, fore tibia 277 μm long, hind tibia 355 μm long. Comb of 12 setae, longest 40 μm long, shortest 22 μm long.

Abdomen. Tergite I with 4 setae, T II–VI each with 10–14 setae, T VII with 16 setae, T VIII with 8 setae. Sternite I bare, S II–VI each with 3–6 setae, S VII with 10 setae, S VIII with 25 setae.

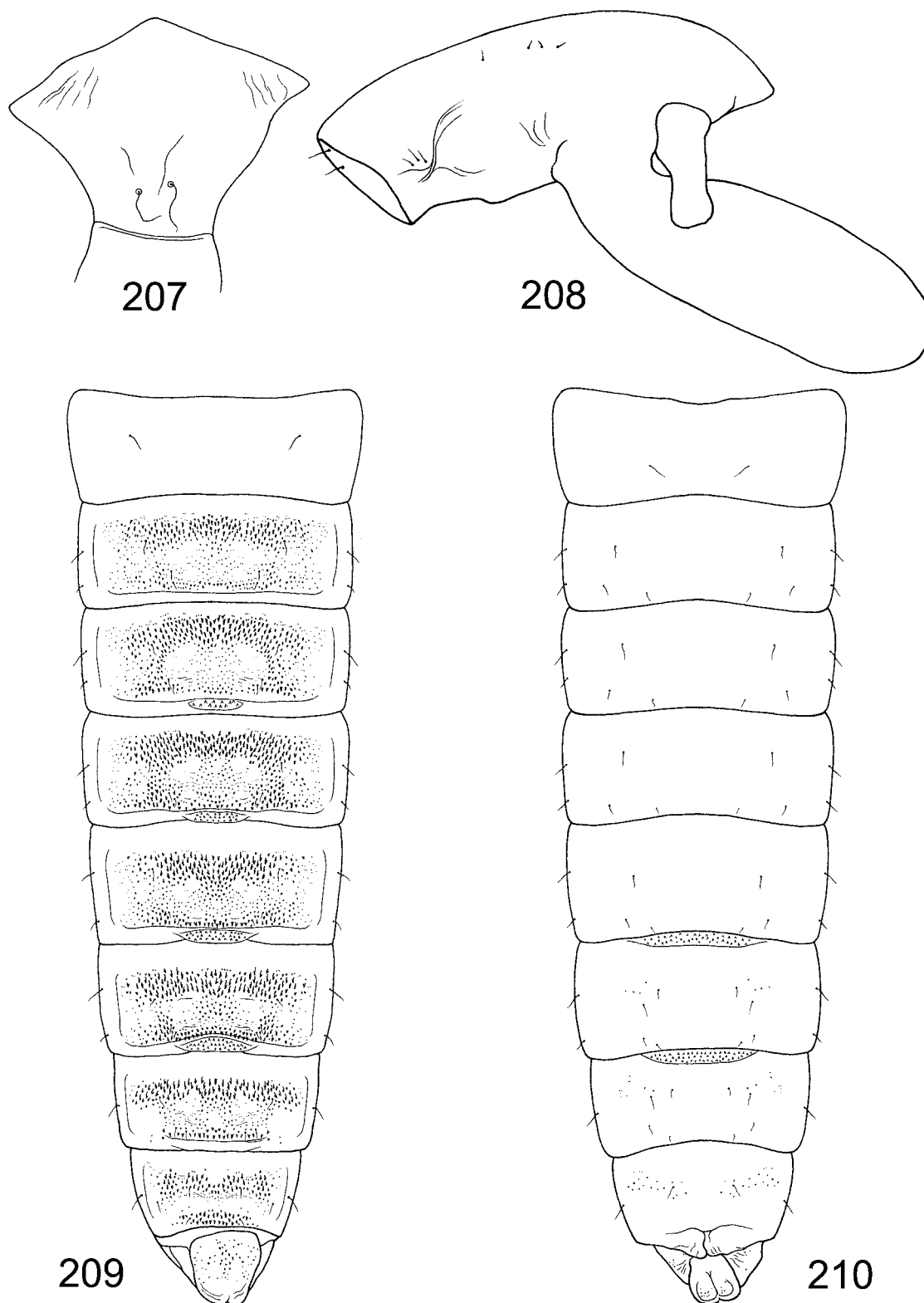
Genitalia. Gonocoxite adpressed, with 2 strong and 3 weak setae. Tergite IX slightly divided, with 10 setae; apodeme against gonocoxite 62 μm long. Cercus lost. Seminal capsules relatively pale with 16 μm long microtrichia. Spermathecal ducts slightly widened before separate openings.

Remarks. This species is somewhat enigmatic. The costal extension especially in the female is relatively longer than in most other members of the genus. There appear to be two weak acrostichals which were overlooked in the original description. However, the male genitalia are quite similar to other species of the group.

Distribution and biology. The species is known from St. Vincent and St. Lucia and from Costa Rica and Brazil. The species is apparently quite common in Brazil where it was taken in several nature reserves along the coast at altitudes varying from sea level to above 1.800 m a.s.l. In Costa Rica it was taken in Malaise traps both in a tropical pre-montane wet forest at La Selva and in a cloud forest on the Volcano Cacao at about 1.000 m altitude.

Pseudosmittia sp. "Brazil"
(Figs 207–210)

Material examined. BRAZIL: Amazonas State, Rio Maramá, North Mission San Antonio, A491, 1 pupal exuviae, 24.i.1963, E.J. Fittkau (ZSM).



FIGURES 207–210. *Pseudosmittia* sp. "Brazil", female pupa. **207**—frontal apotome; **208**—thorax; **209**—tergites; **210**—sternites.

Pupa (n = 1). Total length 1.80 mm. Exuviae essentially colorless.

Cephalothorax (Figs 207–208). Frontal apotome, thorax and wing sheath smooth. Frontal seta and median antepnotals each about 35 µm long. Distance between Dc₁ and Dc₂ 59 µm, between Dc₂ and Dc₃ 16 µm, between Dc₃ and Dc₄ 5 µm.

Abdomen (Figs 209–210). Tergite I bare; T II–IX with extensive shagreen, stronger anteriorly and posteriorly and with bare preapical band on T VIII. Sternites I–V bare, S VI–IX with anterolateral shagreen, weak on T IX. Tergal conjunctive III/IV with 12 spinules, IV/V with 22, V/VI with 32, VI/VII with 26 spinules. Sternal conjunctive IV/V possibly without spinules, V/VI with 42 spinules, VI/VII with 53 spinules. Anal segment without setae.

Remarks. This species from the Amazon area clearly belongs in the *forcipata* group. It differs from other associated pupae of the group by having spinules only on two sternal conjunctives.

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