Description of *Micropygomyia* (*Micropygomyia*) *ancashensis* sp. nov. and the female of *Lutzomyia* (*Helcocyrtomyia*) *chavinensis* Pérez & Ogusuku (Diptera, Psychodidae, Phlebotominae) from Ancash department, Peru

Eunice A Bianchi Galati/+, Abraham G Cáceres*

Departamento de Epidemiologia, Faculdade de Saúde Pública, Universidade de São Paulo, Av. Dr. Arnaldo 715, 01246-904 São Paulo, SP, Brasil *Sección de Entomología, Instituto de Medicina Tropical "Daniel A. Carrión", Universidad Nacional Mayor de San Marcos and Laboratorio de Entomología, Instituto Nacional de Salud, Lima, Perú

A male of a new species Micropygomyia (Micropygomyia) ancashensis *sp. nov. and a female of the* Lutzomyia (Helcocyrtomyia) chavinensis *Pérez & Ogusuku, 1999 captured in the Antonio Raymondi province, department of Ancash, Peru are described and illustrated. The new species belongs to the* cayennensis series, *being closest to* Mi. lewisi *(Feliciangeli Ordoñez & Férnandez) though presenting highly sclerotized pseudotracheae on the labella that seem to constitute an autapomorphy among American Phlebotominae, and a clypeus almost completely covered with setae, as in* Warileya. *The female of* Lu. chavinensis *is close to those of* Lu. blancasi *Galati & Cáceres 1990,* Lu. noguchii *(Shannon, 1929), and* Lu. pallidithorax *Galati & Cáceres 1994.*

Key words: description - *Lutzomyia* (*Helcocyrtomyia*) *chavinensis* - *Micropygomyia* (*Micropygomyia*) *ancashens*is sp. nov. - Phlebotominae, Pyschodidae - taxonomy.

A male of a new species of *Micropygomyia* (*Micropygomyia*) was captured during entomological studies undertaken in 1999 in the Antonio Raymondi province, department of Ancash, Peru. Together with this specimen, two males of *Lutzomyia* (*Helcocyrtomyia*) *chavinensis* Pérez & Ogusuku, 1999 and one female which has not hitherto been described and that we presume to belong to this same species were also found.

Micropygomyia Barretto, 1962, proposed as subgenus of *Lutzomyia* França, 1924, was raised to genus level of Brumptomyiina by Artemiev (1991), with the inclusion of the three subgenera: *Micropygomyia, s. str*., *Sciopemyia* Barretto, 1962, and *Sauromyia* Artemiev, 1991. Galati (1995, 2003a) included *Micropygomyia* in Sergentomyiina, and divided the genus into four subgenera: *Silvamyia* Galati 1995, *Sauromyia*, with two series: *oswaldoi* and *atroclavata*; *Coquillettimyia* Galati 1995, also with two series: *vexator* and *chiapanensis* and *Micropygomyia, s. str*., divided into two series: *cayennensis* and *pilosa*; beyond these subgenera, two isolated species: *Mi. xerophila* (Young, Brener & Wargo, 1983) and *Mi. breviducta* (Barretto, 1950) were included.

According to Galati (1995, 2003b) the subgenus *Micropygomyia* may be characterized as follows: both sexes with palpomere V longer than III, and palpomere II shorter or equal to IV; Newstead's spines grouped in the basal part of palpomere III; absence of the papilla on the antennomere AV; ventrocervical sensillae present, without setae on the anterior margin of the katepisternum. Male: post-alar setae absent; labial suture forming a fork; gonostyle with four spines, one being apical; gonocoxite with or without tuft of setae. The females present cibarium with four or more posterior (horizontal) teeth with fused base; pharynx with or without spines in its apical region. The males of the *pilosa* series present the lower external spine in the gonostyle atrophied; the females have a cibarium with a long and narrow chamber, in such a way that the anterior teeth are situated laterally in the greater part and the two posterior pairs are united at the base; ascoids of AIV long, their apices almost reaching the apex of the article; rudimentary common sperm duct. The males of the *cayennensis* series present a gonostyle with four fully developed spines and gonocoxite without tuft of setae either in the basal or in the median region; females: ascoids of AIV short, generally their apices do not reach the point of insertion of the papilla and their length is equivalent to 1/3 or half of the flagellomere's length; cibarium with two or more pairs of posterior teeth.

The subgenus *Helcocyrtomyia* was proposed by Barretto (1962) as belonging to the genus *Lutzomyia* França, 1924, including the species-group: *peruensis, oswaldoi, vexatrix* and *sanguinarius.* Theodor (1965) did not accept *Helcocyrtomyia*, but he adopted the species-groups: *oswaldoi* and *vexatrix*; this latter he divided into the series: *vexatrix* and *peruensis*. In the series *peruensis*, were included the species considered by Barretto (1962) as the *sanguinarius* group. Lewis et al. (1977) follow Theodor (1965) and Martins et al. (1978) in adopting Barretto's (1962) proposition. Young and Duncan (1994) adopted the *oswaldoi* group in accordance with Theodor (1965) and *Lu.* (*Helcocyrtomyia*), though without separating it into series. Galati (1995) adopted *Lu.* (*Helcocyrtomyia*); however, the *vexato*r and

+Corresponding author: egalati@usp.br
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oswaldoi series were included in the genus *Micropygomyia*, the former series in the subgenus *Coquillettimyia* Galati, 1995, and the latter in *Sauromyia*. Galati and Cáceres (1994) divided *Lu.* (*Helcocyrtomyia*) into three series: *sanguinaria* Barretto, 1962, *osornoi* Galati & Cáceres, 1994 and *peruensis*.

Lu. (*Helcocyrtomyia*) *chavinensis,* having as type-locality San Marcos, Huari province, Ancash department, at an altitude of 2900 m (Pérez & Ogusuku 1999), in accordance with Galati (2003a), belongs to the series *peruensis*. The females of this series are characterized by a long clypeus, 1/3 longer than the length of the head, and the palpomere IV equivalent to or longer than 2/3 of the III, or with four or more pairs of setae; cibarium with four posterior horizontal teeth, spermathecae ringed with the apical ring clearly longer than the pre-apical.

The objective of this study is to present the description of a new species of the genus *Micropygomyia* and of the female of *Lu.* (*Helcocyrtomyia*) *chavinensis*.

MATERIALS AND METHODS

The specimens were clarified in accordance with Forattini (1973) and mounted on microscope slides in NC medium (Cerqueira 1943). They were measured with a Zeiss® eye-piece calibrated with a standard Zeiss® scale and drawn with the help of an Olympus® microscope.

The specimens were captured with a manual aspirator in a cave, located at 3000 m a.s.l. The structural terminology, generally, follows McAlpine (1981), apart from some specific structures studied in phlebotomines (ventrocervical sensillae, setae on the anterior edge of katepisternum and labial sutures) which conform to Galati's (2003b) terminology. The measurements are given in micrometers. The type-material will be deposited in the entomological collection of the Instituto Nacional de Salud (INSL), Lima, Peru.

Micropygomyia (*Micropygomyia*) *ancashensis* sp. nov. (Figs 1-9, 24)

Holotype (male) - Total body length 2793; whole insect with pale coloring.

Head (fontal view) (Fig. 1) - Length 435; width 305. Eye: length 165; width 96. Interocular distance 136. Interocular suture separated from antennal suture. Clypeus: length 174; width 122. Antennomere lengths: AIII 331, AIV 154 (Fig. 3), AV 163 (Fig. 4), AXI 140, AXII 132, AXIII-AXVI were lost. AIII/head length ratio: 0.76:1.0. Antennal formula AIII-AXII 2; ascoids simple and very short, the apices of those on AIV do not reach the middle of the segment (Fig. 3); papilla absent on AV (Fig. 4), AXI and AXII. Length of the palpomeres: I 44, II 169, III 194, IV 176, V 465. Palpal formula: 1.2.4.3.5. Newstead's spines grouped in the basal third of palpomere III (Fig. 5) and absent on palpomere II. Labrum-epipharynx 244 long. Cibarium (Fig. 2): anterior and posterior teeth not observed with 40x objective; sclerotized arch incomplete; sclerotized area of funnel shape; salivary gland highly conspicuous. Pharynx without spines. Labium with the labial sutures united only in their basal region. Labella with strong sclerotized pseudotracheae (Fig. 24).

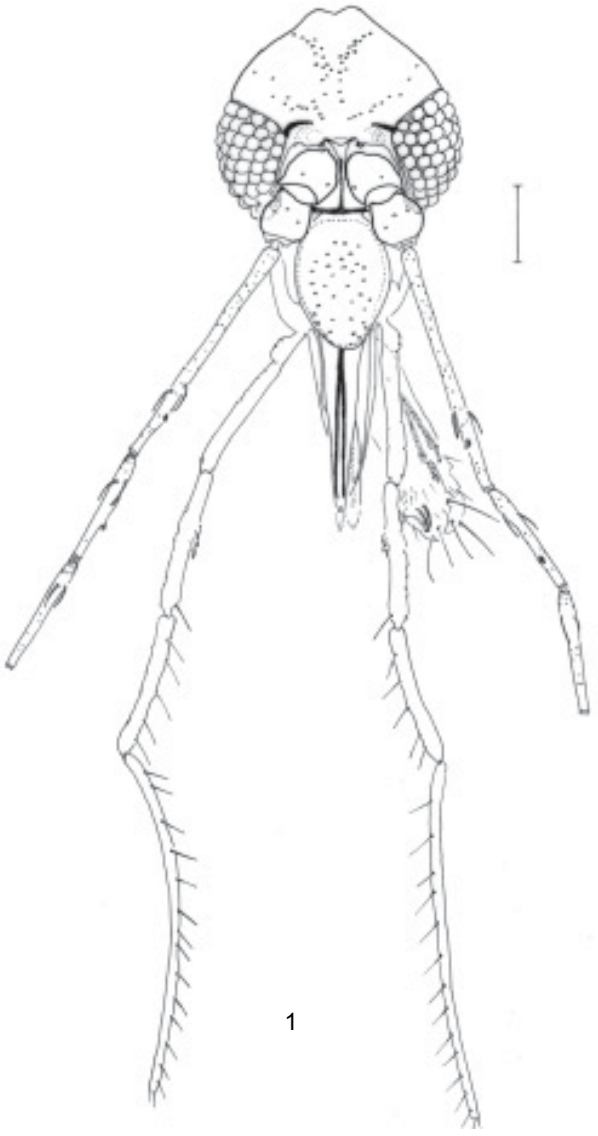
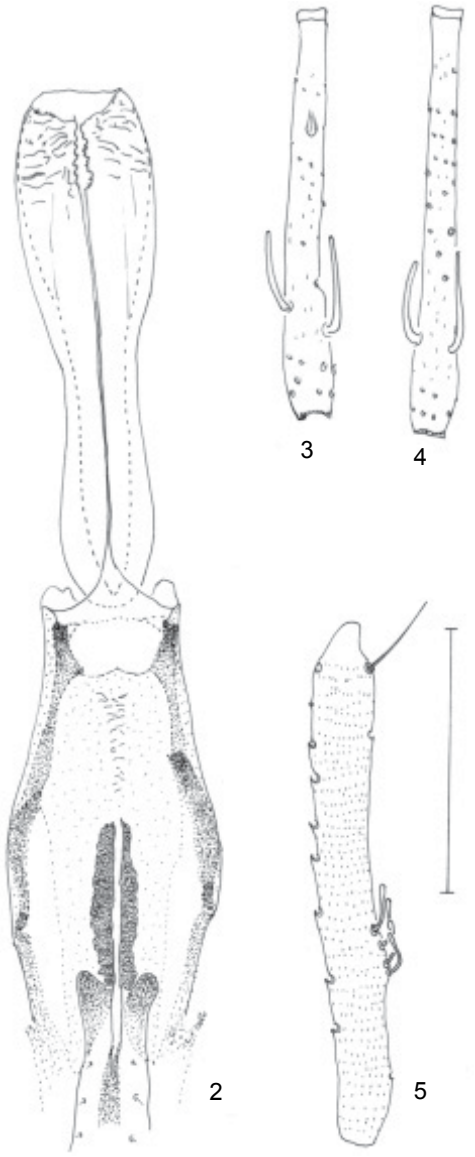


Fig. 1: head, frontal view (holotype ♂). *Micropygomyia ancashensis* sp. nov. Bar = 100 mm.

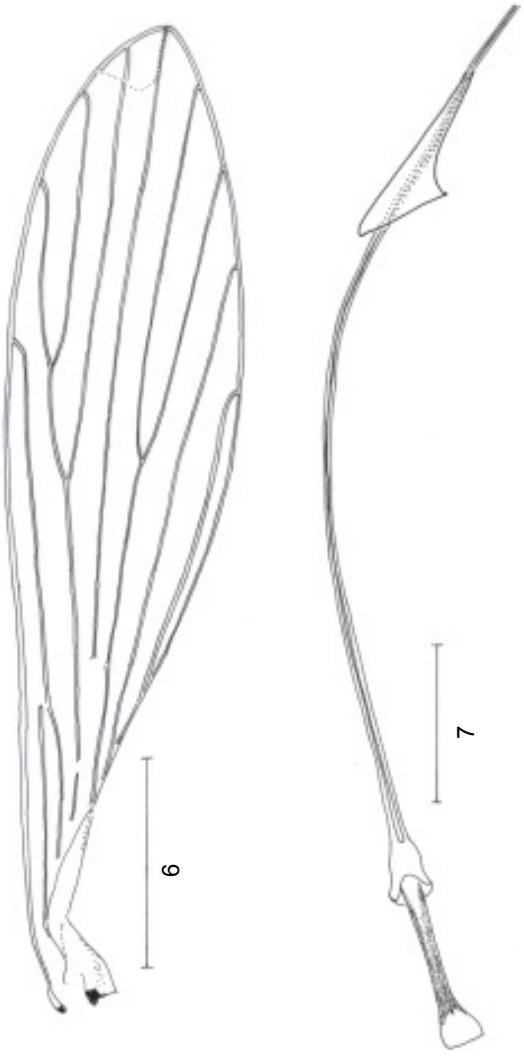
Cervix - Ventrocervical sensillae present.

Thorax - Length 653. Mesonotum length 560. Pleurae with six proepimeral setae and five upper anepisternal setae; setae absent on the anterior katepisternum margin; suture between katepimeron and metepisternum absent. Wing (Fig. 6): length 2532, width 592; length of vein sections: *alpha* 441, *beta* 261, *gamma* 435, *delta* 61, *pi* 87, R_5 1592. Length of femora, tibiae, basitarsi, and tarsi II+III+IV+V: foreleg 957, 1279, 766, 853; midleg 896, 1414, 835, 855; hindleg lost. The implantation of the spines on tarsomere III is made as verticiles on three levels.

Abdomen - 1705 long. Tergites VI-VII with tergal papillae. Terminalia (Fig. 8): gonostyle 128 long, with four spines with the following disposition: one apical,



Figs 2-5: *Micropygomyia ancashensis* sp. nov. (holotype ♂). 2: cibarium and pharynx; 3: AIV; 4: AV; 5: palpomere III. Bar = 100 mm.



Figs 6-7: *Micropygomyia ancashensis* sp. nov. (holotype ♂). 6: wing (bar = 500 mm); 7: ejaculatory pump and ducts (bar = 100 mm).

the upper external subapical, the lower external slightly beyond the middle and the internal one implanted in the middle; gonocoxite 202 long × 55 wide, without setae; paramere simple, dorsal margin 154 long, the basal half rectangular without setae and the apical half tapering and covered with thin setae; conical aedeagus: dorsal margin length 119; lateral lobe: length 200; width 24; cercus 173 long. Genital pump 132 long; piston length 110; pavilion width 26; chamber width 40; genital filaments length 550 or 4.17 times the length of the genital pump. Tip of genital filaments simple and truncated (Fig. 7).

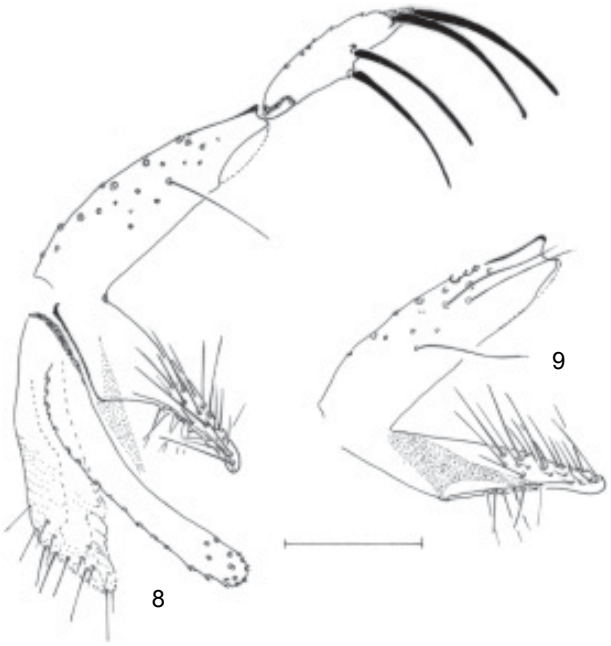
Type-material - Holotype male. PERU, Department of Ancash, Antonio Raymondi province, Chingas district, in cave located at 3000 m a.s.l., captured with manual aspirator, 7 Jun 1999, 8:00 h, Cáceres AG col.

The *Mi. ancashensis* species was thus named in allusion to the department in which the specimen was captured.

Lutzomyia (*Helcocyrtomyia*) *chavinensis* Pérez & Ogusuku, 1999
(Figs 10-23)

Female - Total body length about 3448. General coloration light brown.

Head (Fig. 10) - Length 518; width 348. Eye: length 113; width 95. Interocular suture separated from antennal suture. Interocular distance 180. Clypeus: 196 long; width 117. Flagellomeres: AIII 392, AIV 176 (Fig. 11), AV 169 (Fig. 12), AXI 138, AXII, 130, AXIII 120 (Fig. 13), AXIV 80 (Fig. 14), AXV 70 (Fig. 15), AXVI 75 (Fig. 16). AIII/head length ratio: 0.76:1.0. Antennal formula: AIII-AXV 2, XVI 0. Ascoids simple, apices of those on AIV go slightly beyond the middle of the article (Fig.



Figs 8-9: *Micropygomyia ancashensis* sp. nov. (holotype ♂). 8: terminalia; 9: the other gonocoxite, paramere, and aedeagus. Bar = 100 mm.

Fig. 10: *Lutzomyia chavinensis* (♀) head. Bar = 100 mm.

11). Papilla present on AV (Fig. 12). Palpomere length: I 35, II 187, III 220, IV 165, V 470. Palpal formula: 1.4.2.3.5. Newstead's spines grouped in the median third of palpomere III (Fig.17). Labrum-epipharynx (Fig. 18) 365 long. Cibarium (Fig. 22): presence of four posterior needle-like horizontal teeth set into a clear monticle; presence of eight greatly reduced anterior teeth, disposed in a transversal row; the posterior bulge is conspicuous and the sclerotized area narrow and long; lateral teeth not observed with 40x objective; arch incompletely sclerotized. Pharynx without conspicuous spines in its apical region. Hypopharynx (Fig. 19) with about 18 well-delineated apicolateral teeth. Maxilla: lacinia with about six external teeth disposed in a longitudinal row and 23 internal teeth (Fig. 20).

Cervix - ventrocervical sensillae present.

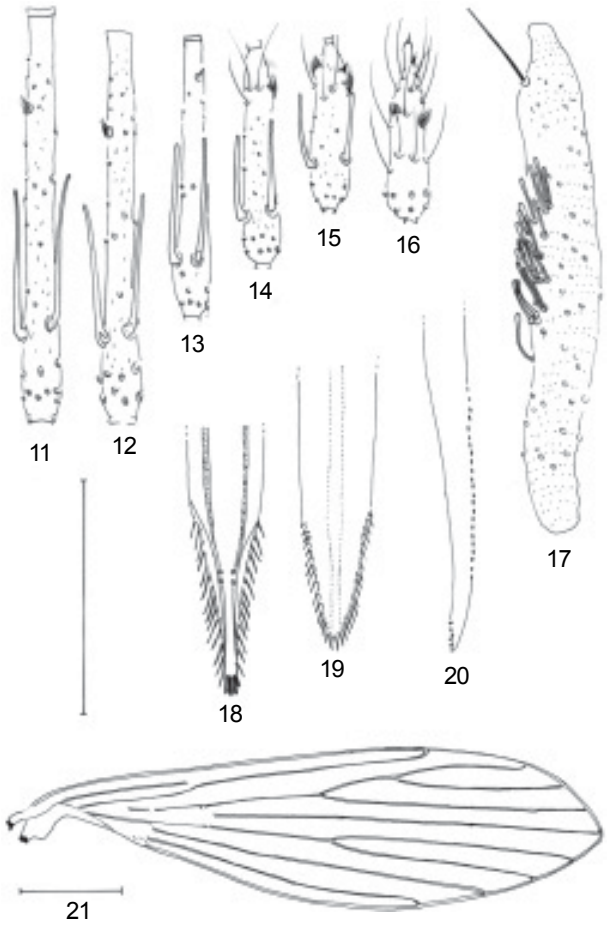
Thorax - Length 780. Mesonotum 680 long. Pleurae with two proepimeral setae, 11 upper anepisternal setae; setae absent on the anterior katepisternum margin; suture between katepimeron and metepisternum absent. Wing (Fig. 21): length 2993, width 810; length of vein sections: *alpha* 610, 670, *beta* 375, 390, *gamma* 557, 560, *delta* 100, 150, *pi* 50, 70, R5 1960, 1980. Length of femora, tibiae, basitarsi, and tarsi II+III+IV+V: foreleg 1018, 1253, 870, 943; midleg 983, 1548, 948, 957; hindleg 1088, 1827, 1218, 1108.

Abdomen - Length 2150. Tergite VIII with nine or 10 setae on each side. Spermathecae (Fig. 23) 28 long and 12 at maximum width; with about 11 rings, the apical longer than and as wide as the preapical one; individual sperm ducts 210 long × five wide in the median part and 6.8 at the junction with the spermathecae; common sperm duct membranous, smooth and short, width at its insertion 11, the length was impossible to measure; terminal knob individualized. Cercus 158 long.

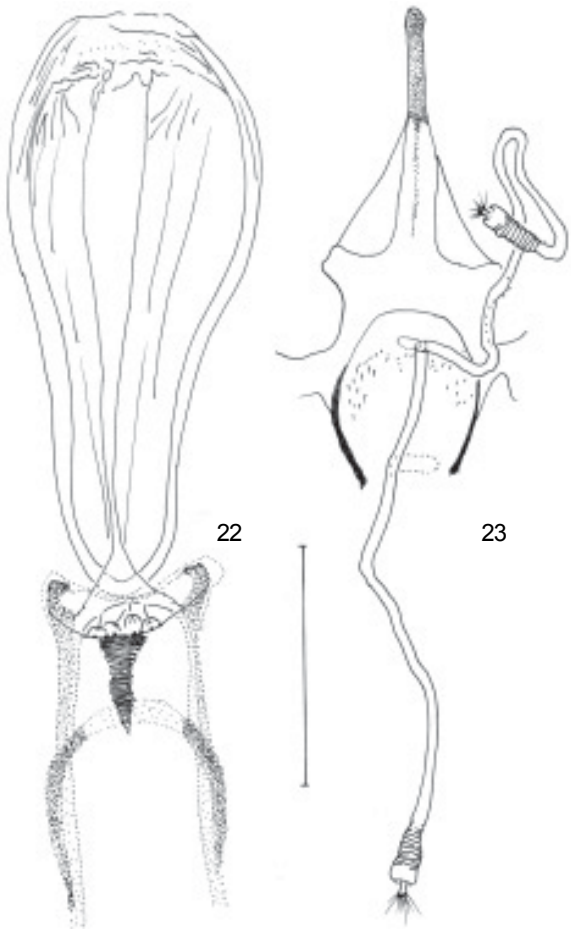
Material examined - one female: PERU, Ancash department, Antonio Raymondi province, Chingas district, in cave located at 3000 m a.s.l., captured with manual aspirator 7 Jun 1999, Cáceres AG col.

TAXONOMIC DISCUSSION

The morphological characteristics described for *Mi.* (*Mi.*) *ancashensis* sp. nov.: gonostyle with four fully developed spines; gonocoxite without tuft of setae and paramere simple permit its inclusion in the *cayennensis* series which is constituted by 12 species and the *Mi. cayennensis* complex of eight subspecies, with the re-



Figs 11-21: *Lutzomyia chavinensis* (♀). 11: AIV; 12: AV; 13: AXIII, 14: AXIV; 15: AXV; 16: AXVI; 17: palpomere III; 18: labrum-epipharynx; 19: hypopharynx; 20: lacinia of the maxilla; 21: wing. Bars: wing = 500 mm and the other figures = 100 mm.



Figs 22-23: *Lutzomyia chavinensis* (♀). 22: cibarium; 23: spermathecae and genital furca. Bar = 100 mm.

spective sex described: *Mi. absonodonta* (Feliciangeli, 1995) (♂♀), *Mi. cayennensis cayennensis* (Floch & Abonnenc, 1941) (♂♀), *Mi. cayennensis braci* (Lewis, 1967) (♂♀), *Mi. cayennensis cruzi* (Gonzales & Garcia, 1981) (♂♀), *Mi. cayennensis hispaniolae* (Fairchild & Trapido, 1950) (♂♀), *Mi. cayennensis jamaicensis* (Fairchild & Trapido, 1950) (♂♀), *Mi. cayennensis maciasi* (Fairchild & Hertig, 1948) (♂♀), *Mi. cayennensis puertoricensis* (Fairchild & Hertig, 1948) (♂♀), *Mi. cayennensis viequesensis* (Fairchild & Hertig, 1948) (♂♀), *Mi. ctenidophora* (Fairchild & Hertig, 1948) (♀), *Mi. cubensis* (Fairchild & Trapido, 1950) (♂♀), *Mi. duppyorum* (Fairchild & Trapido, 1950) (♂♀), *Mi. durani* (Vargas & Diaz-Nájera, 1952) (♂♀), *Mi. farilli* (Vargas & Diaz-Nájera, 1959) (♀), *Mi. hardisoni* (Vargas & Diaz-Nájera, 1952) (♂♀), *Mi. lewisi* (Feliciangeli, Ordoñez & Férnandez, 1984) (♂♀), *Mi. micropyga* (Mangabeira, 1942) (♂♀), *Mi. schreiberi* (Martins, Falcão & Silva, 1975) (♂♀), *Mi. wirthi* (Vargas & Dias-Nájera, 1951) (♀) and *Mi. yencanensis* (Ortiz, 1965) (♂♀).

The pale coloration of the scutum of this new taxon distinguishes it from the other taxa of the *cayennensis* series, except for *Mi. lewisi.* However, there are various differences between the two species: the ratio between the length of the genital ducts/genital pump is smaller in the new species (4.17:1.0) than in *Mi. lewisi* (5.0:1.0); the palpus is much longer in the new species (1048 mm) while in *Mi. lewisi* its maximum value is 764 mm (Feliciangeli. 1995); and the tip of the genital filament is not enlarged in the new species, whereas it is in *Mi. lewisi*.

The presence of sclerotized pseudotracheae on the labella (Fig. 24) of this new taxon seems to be an autapomorphy in this species, seeing that we never find this sclerotinization in other species, at least, among American phlebotomine fauna. On the other hand, one characteristic in the plesiomorphic state, the clypeus practically completely covered with setae, present in this new species has otherwise only been observed among American sandflies in *Warileya*. Further, tarsomere III of this new taxon with the spines implanted in verticiles

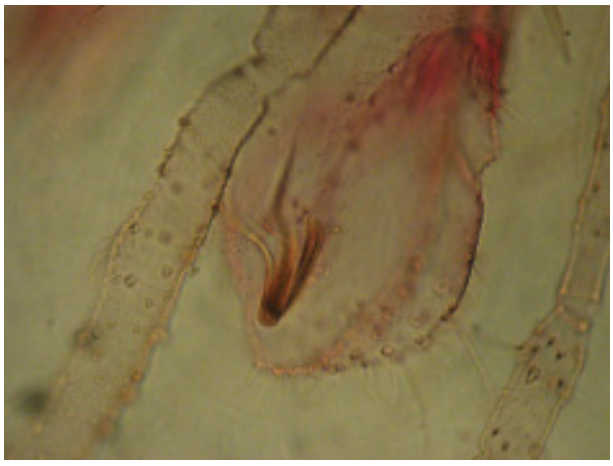


Fig. 24. *Micropygomyia ancashensis* sp. nov. (holotype ♂). Labella with strong sclerotized pseudotracheae.

at three levels, at least on the foreleg and midleg (the hindlegs were lost) is also infrequent among *Micropygomyia*. Thus this new taxon presents various characteristics that distinguish it from the species of *Micropygomyia* and also of other groups of phlebotomines. As regards the female described the suspicion that justifies its inclusion in *Lu.* (*Helcocyrtomyia*) *chavinensis* is based on: its capture together with two males of that species, whose type-locality is the Ancash department (2900 m); the absence of setae on the anterior margin of the katepisternum, the very short *delta/alpha* alar index (0.16-0.22) and the general coloration, as in the male.

In the *peruensis* series, the absence of setae on the anterior margin of the katepisternum occurs as well as in *Lu. chavinensis,* in *Lu. noguchii* (Shannon, 1929), *Lu. blancasi* Galati & Cáceres, 1990, and *Lu. pallidithorax* Galati & Cáceres 1994.

The presumed female of *Lu. chavinensis* is distinguished from that of *Lu. pallidithorax* by having a clypeus longer than the eye and a smaller *delta* (about 1/6 of *alpha*), whereas in this latter species the clypeus is shorter than the eye and *delta* is about 1/3 of *alpha*; from *Lu. noguchii*, by the greater length of AIII and the labrum-epipharynx (392 mm and 365 mm, respectively) which in this species are smaller than 300 mm; from *Lu. blancasi* by the shorter antennomeres of this latter species (AIII 324 ± 19 mm; AIV 147 ± 7 mm; n = 10) (Galati & Cáceres, 1990) and by the posterior teeth of *Lu. chavinensis* which are implanted in monticles, differently from *Lu. blancasi*.

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