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TAXONOMY AND DISTRIBUTION OF PHLEBOTOMINE SANDFLIES IN VENEZUELA. II. THE SUBGENUS *TRICHOPYGOMYIA* OF THE GENUS *LUTZOMYIA* (DIPTERA: PSYCHODIDAE)

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Species of sandflies in the subgenus Trichopygomyia *of the genus* Lutzomyia *occurring in Venezuela are reviewed. A new species,* Lutzomyia pinna *n. sp. is described. A distribution map and a pictorial key for males are provided with remarks on the ecological data collected in Venezuela.*

Key words: *Lutzomyia – Trichopygomyia – L. pinna* n. sp. *– L. conviti – L. longispina – L. wagleyi* – key – taxonomy – distribution

The phlebotomine species firstly placed in the *longispinus* group by Fairchild (1955) and maintained in this informal category by Theodor (1965), Lewis et al. (1977) and Young (1979), were included in the subgenus *Trichopygomyia* by Barretto (1962). This systematic category is at the moment followed by the majority of experts in this group of insects (Martins et al., 1978, 1983; Arias et al., 1983; Young & Morales, 1987; Le Pont & Desjeux, 1988).

Arias et al. (1983) listed nine species and characterized this subgenus as follows:

Males show a coxite without tuft but with a row of long ventral hairs; the style bears 4 large spines and a small subterminal seta, basal spine isolated and terminal spine standing on a long process, the parameres are bifurcated or trifurcated and the lateral lobes are simple.

Females have a cibarium with 4 horizontal teeth, cibarial arch complete or nearly so and the spermathecae pear-shaped with a terminal knob.

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Young & Morales (1987) and Le Pont & Desjeux (1988) added to the list three more species from Colombia and one species from Bolivia respectively.

In the present paper a new taxon from Venezuela is described. The other species at present known in this country are listed and reviewed and their geographical distribution is mapped. Because of the scarcity of material and the difficulties in separating females based only in morphological characters, a pictorial key is provided solely for the males.

Medical importance – Young (1979) states that most of the species in this subgenus are attracted to ligth, inhabit animal burrows but do not attack man. Arias et al. (1983) suggest however that because of the close relationship with armadillos, these sandflies migth be vectors of *Leishmania* sp. isolated from these mammals in Brazil (Lainson et al., 1979).

Lutzomyia longispina (Mangabeira)

Flebotomus longispinus Mangabeira, 1942: 111-218 (♂ holotype, Brazil) *Mem. Inst. Oswaldo Cruz, 37:* 186-189 Mangabeira, 1942 (♀) *Mem. Inst. Oswaldo Cruz, 37:* 251-257.

Phlebotomus longispinus: Pifano & Ortiz, 1952. *Rev. San. Asist. Soc., 17:* 135-151 (Venezuela, Bolívar, La Gran Sabana).

Lutzomyia longispina Martins et al., 1978: 114 (distr.); Young, 1979, *Techn. Rep.: 121* (full ref.) Arias et al., 1983. *Mem. Inst. Oswaldo Cruz, 78:* 449-472 (review); Ryan, 1986, *Doc. Tecn.: 38* (Keyed), 40 (Figs).

Distribution: Colombia, Brazil, French Guyana, Venezuela (Bolívar).

Material examined: Brazil, Amazonas, CDC light trap (no date) 1 ♂ (Collectors: J. Arias, R. Freitas).

Lutzomyia conviti Ramírez Pérez, Martins & Ramirez

Lutzomyia conviti Ramírez Pérez, Martins & Ramírez, 1976 (♂ holotype, ♀ allotype, Venezuela: Território Federal Amazonas, Ocamo) *Rev. Bras. Biol., 36:* 599-603. Arias et al., 1983. *Mem. Inst. Oswaldo Cruz, 78:* 449-472.

Distribution: Colombia, Venezuela (Território Federal Amazonas).

Material examined: Venezuela, Território Federal Amazonas. Atabapo, Ocamo, 100 m a.s.l., animal burrow 1 ♂ (no date), Caño Cheni, animal burrow 1 ♂, 26.vii.83 (A. Ramirez).

Lutzomyia wagleyi (Causey & Damasceno)

Flebotomus wagleyi Causey & Damasceno, 1945. *Mem. Inst. Oswaldo Cruz, 42:* 25-29 (♂ holotype, Brazil: Amazonas, São Paulo de Olivença).

Lutzomyia wagleyi Martins et al., 1978: 115 (distr.) Morales & Minter, 1981 *Biomedica: 101* (♀ descr.) Feliciangeli et al., 1988. *Med. Veter. Entom.; 2:* 47.

Distribution: Brazil, Colombia, Venezuela (Território Federal Amazonas).

Material examined: Venezuela, Território Federal Amazonas, Caño Marieta. 110 m animal burrow 23 ♂♂ 24 ♀♀. 21.ix.1984 (A. Bravo, A. Ramírez).

Lutzomyia pinna Feliciangeli, Ramírez Pérez & Ramírez, new species (Fig. 1)

Holotype male (measurements in mm.) (slide No. 2.17.4.M). Whole insect dusky, pleura and coxae as dark as mesonotum, terminalia more infuscated. Wing length 2.32, width, 0.67. Head height from vertex to tip of clipeus 0.36; width 0.35. Eyes small separated by 0.18 or distance equal to 7.8 facet diameters. Flagellomere I. 0.27 long, II + III = 0.27; ascoids simple reaching the next segment on all flagellomeres except last two. Labrum 0.18 long. Length of palpomeres: 1, 0.04; 2, 0.09; 3, 0.14; 4, 0.11; 5, 0.35. Cibarium without teeth, cibarial arch incomplete. Pharynx 0.14 long, unarmed. Pleura with 12-14 upper and 4-5 lower episternal setae on each side. Lengths of vein sections: α, 0.54; β, 0.26; γ, 0.31; σ, 0.0. Lengths of femora, tibiae and basitarsi: foreleg, 0.87, 0.94, 0.51; midleg, 0.87, 1.12, 0.59; hindleg 0.94, 1.43, 0.66; femora without spines. Genitalia style 0.27 long with 4 spines at different levels. Subterminal bristle present. Coxite 0.41 long with a ventral frange of long hairs. Paramere stout bearing a slender dorsal arm downwardly turned at apex. Aedeagus well sclerotized 0.22 long, with a dorsal projection as shown in Fig. 1H and an acute tip. Genital pump 0.18 long; each filament 0.53 long or about 2.94 x length of pump with tips as shown in Fig. 1. Lateral lobe 0.50 long.

Allotype ♀ (slide No. 2.17.4.H). Coloration as in ♂. Wing length 2.35, width 0.71. Eyes separated by 0.16 or distance equal to 6.6 facet diameters. Flagellomere I 0.25 long, II + III = 0.25; ascoids simple extend beyond in the flagellomere II. Labrum 0.23 long, FI/L 1.06. Lengths of palpomeres: 1, 0.04; 2, 0.12; 3, 0.16; 4, 0.14; 5, 0.37. Cibarium with 4 horizontal teeth, 4 conspicuous vertical teeth and 5 visible lateral teeth; pigment patch as figured, cibarial arch nearly complete but diffuse in the middle. Unarmed pharynx 0.19 long. Pleura with 21-22 upper and 4-4 lower episternal setae. Length of vein sections: α, 0.58; β, 0.26; γ, 0.26; σ, 0.08. Legs missing. Spermathecae as shown, typical of the group; sperms ducts 0.14, about 2.4 x length of common duct.

Etimology. The specific name, *pinna* meaning fin, refers to shape of aedeagus.

Type data. Holotype ♂. VENEZUELA: Bolivar State. Waramaisen 1000 m tree holes. 12.vii.85. (A. Ramírez; A. Bravo) Allotype ♀ Qda. Jaspe, 860 m Malaise Trap 13.vii.85. Paratypes: 1♂ 1 ♀ same data as holotype, 1 ♂ same data allotype but tree trunk 4.viii.84 (M. D. Feliciangeli; A. Ramírez).

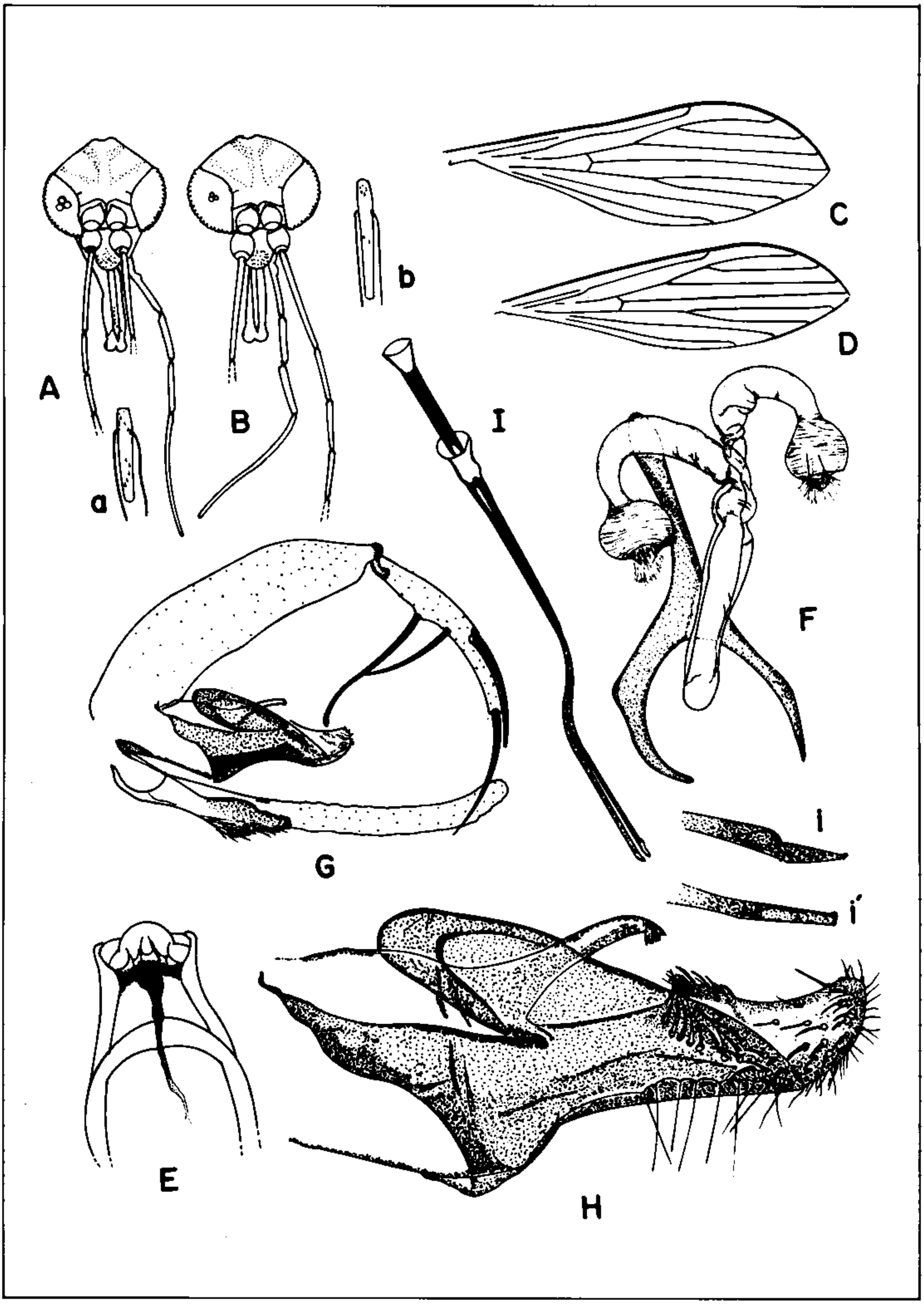

Fig. 1: *Lutzomyia (Trichopygomyia) pinna* n. sp. Feliciangeli, Ramirez Perez & Ramirez (Holotype No. 2.17.4.M and allotype). A: ♀ head, a: ♀ flagellomere II, B: ♂ head, b: ♂ flagellomere II, C: ♀ wing, D: ♂ wing, E: ♀ cibarium and pharinx, F: spermathecae, G: ♂ genitalia, H: paramere enlarged, I. ♂ genital pump and filaments. Scale in mm.

Holotype and allotype of *L. pinna* n. sp. will be deposited at the Centro Nacional de Referencia sobre Taxonomía de Flebótomos, Universidad de Carabobo, Maracay, Venezuela, paratypes in Florida State Collection of Arthropods, Gainesville, Florida, U.S.A., and the British Museum (Natural History), London, U. K.

Distribution: Venezuela (Bolívar).

Discussion. Among the species in the subgenus *Trichopygomyia,* the male of the new species, *L. pinna,* most closely resembles *L. dasypodogeton* (Castro, 1939), especially in the shape of the paramere and the large dorsal projection of the aedeagus. In *L. pinna* n. sp. the dorsal arm of the paramere is clearly curved, whereas in *L. dasypodogeton* such arm is but slightly clubbed. Moreover, in these species the shape of the aedeagus differs and easily allows one to separate the two taxa. The spermathecae of the female have long individual sperm ducts and an inconspicuous common duct, more similar to those of *L. conviti* which shows a longer common duct than *L. dasypodogeton* (Martins et al., 1983). The sexes of *L. pinna* were associated on the basis of subgeneric features, collection data and the fact that no other *Trichopygomyia* males were captured at the same locality.

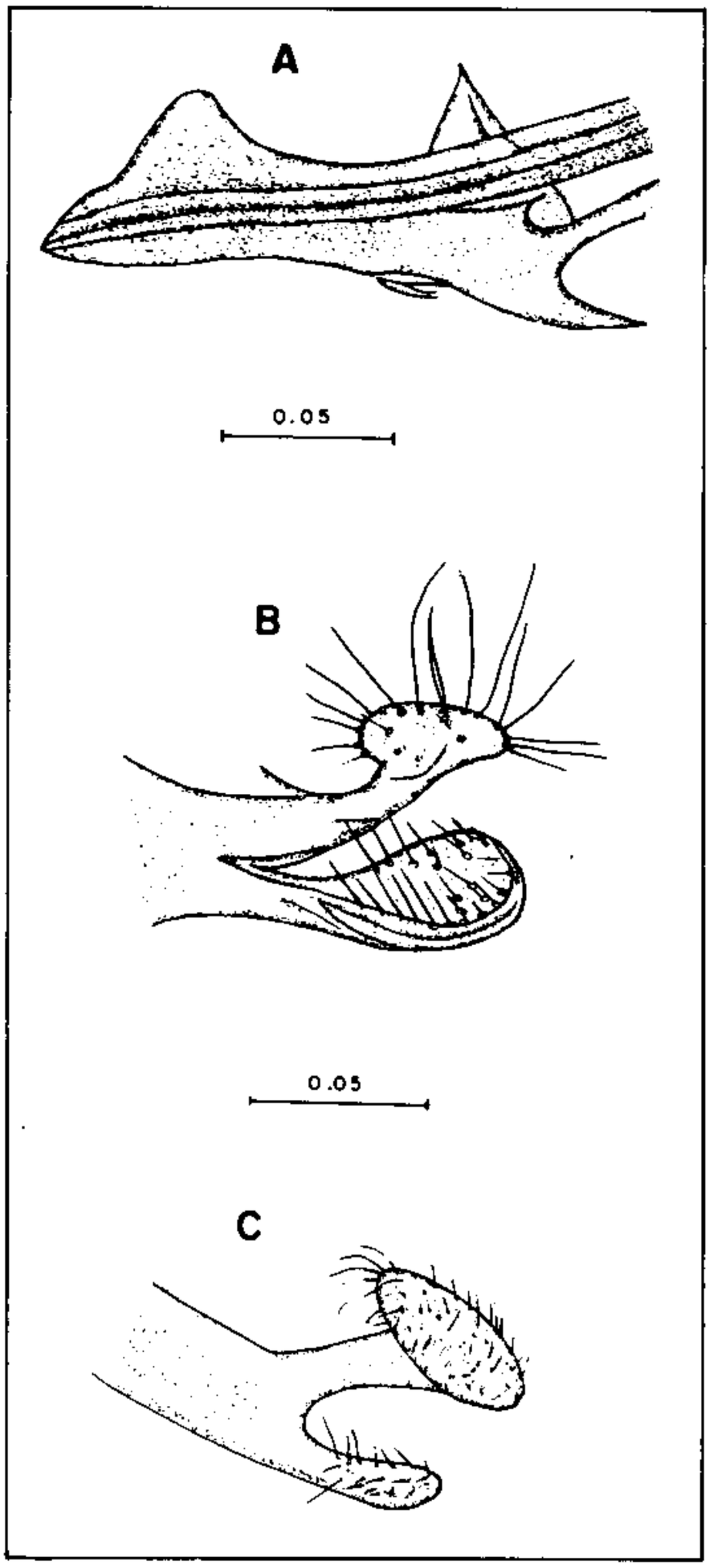

Fig. 2: A: Aedeagus of *Lutzomyia conviti,* B: end of the paramere of *Lutzomyia longispina,* C: end of the paramere of *Lutzomyia wagleyi.*

GENERAL DISCUSSION

Taxonomy – Fourteen species of phlebotomine sandflies are at present included in the subgenus *Trichopygomyia* of the genus *Lutzomyia: L. conviti* Ramirez Perez, Martins & Ramirez, 1976; *L. dasypodogeton* (Castro, 1939); *L. elegans* Martins, Llanos & Da Silva, 1976; *L. ferroae* Young & Morales, 1987; *L. gantieri* Le Pont & Desjeux, 1988; *L. longispina* (Mangabeira, 1942); *L. martinezi* Young & Morales, 1987; *L. raticliffei* Arias, Ready & Freitas, 1983; *L. rondoniensis* Martins, Falcão & da Silva, 1965, *L. trichopyga* (Floch & Abonnenc, 1945); *L. triramula* (Fairchild & Hertig, 1952); *L. wagleyi* (Causey & Damasceno, 1945); *L. witoto* Young & Morales, 1987 and *L. pinna* n. sp.

Four of them are listed here for Venezuela: *L. conviti, L. pinna, L. wagleyi* and *L. longispina. L. conviti* and *L. pinna* are authoctonous of this country, *L. wagleyi* has been recently discovered and abundant material of both sexes has been studied, but for *L. longispina* some doubts arise in relation to the unique record available in the literature (Pifano & Ortiz, 1952). It lacks information about the precise locality procedence and the amount and sex of the specimens studied. Since only the spermathecae were pictured, we presume that solely females might have been collected. As Arias et al. (1983) point out, records of *L. longispina* based only on females should be treated with caution. Therefore, the presence of this species in Venezuela requires confirmation.

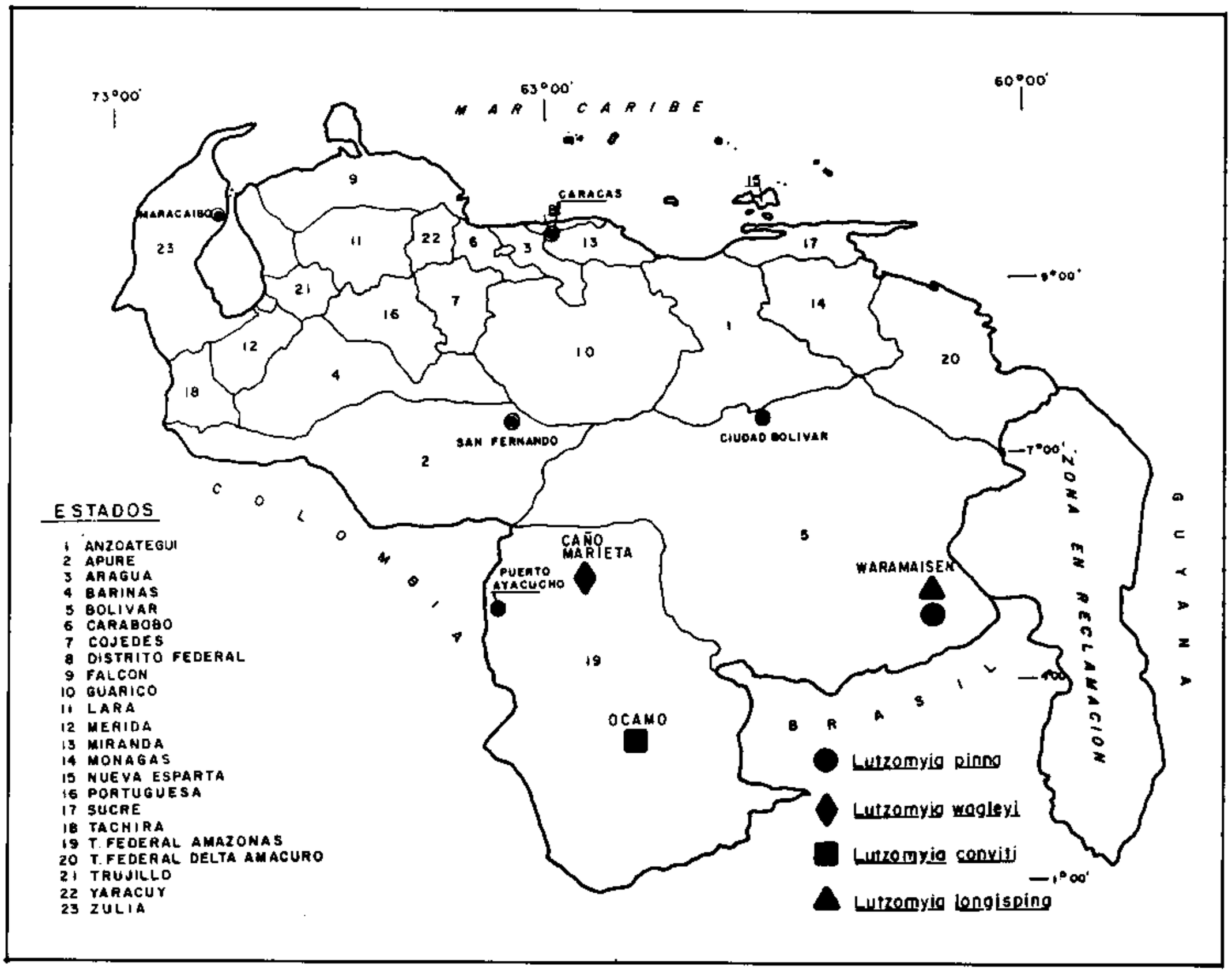

Fig. 3: known geographical distribution of sandflies within the subgenus *Trichopygomyia* in Venezuela.

I prefer, however, for the time being, to retain *L. longispina* in the list of Venezuelan sandflies until more extensive collections are carried out at La Gran Sabana.

Distribution – Except for *L. triramula*, the only taxon which is known to extend from Central America: Panamá (Fairchild & Hertig, 1952), Belize (Williams, 1970) and Costa Rica (Murillo & Zeledón, 1985) to the Northern Colombia (Osorno et al., 1972; Young, 1979) and for *L. gantieri*, which has only been found in the subandean region of Bolivia, the other species in the subgenus *Trichopygomyia* are scattered in Southern Colombia (Young, 1979; Morales & Minter, 1981; Young & Morales, 1987) and Venezuela (present work), Brazil (Martins et al. 1978, 1983; Arias et al., 1983; Ryan, 1986) and French Guyana (Leger et al., 1977).

Figure 3 gives a distribution map for the 4 species in the subgenus *Trichopygomyia* known in Venezuela. *L. conviti* and *L. wagleyi* have been found in the Amazon basin in lowlands areas, associated with animal burrows. *L. pinna* and *L. longispina* have been recorded from the Guayanensis Shield in highland areas. Of the 22 life zones recognized in Venezuela by Ewel & Madriz (1960), *L. conviti* and *L. wagleyi* were found in a tropical moist forest while *L. pinna* from La Gran Sabana was collected in a pre-mountain moist forest. This species was caught from tree bases and Malaise trap but larger populations have to be encountered for a better knowledge of the ecology of this fly. Data on the niches of *L. longispina* in Venezuela will be known when its presence is confirmed.

KEY TO THE MALES OF *TRICHOPYGOMYIA* IN VENEZUELA

1. Aedeagus with dorsal projection 2
– Aedeagus without such dorsal projection . 3
2. Dorsal projection on the aedeagus small and simple as a mound (Fig. 2A) . . . . *L. conviti*
– Dorsal projection on the aedeagus large and reclined backwards as a fin (Fig. 1H). . . . . *L. pinna*

3. Dorsal arm of the paramere large than the ventral arm (Fig. 2B) . . . . . *.L. wagleyi*
– Dorsal arm of the paramere smaller than the ventral arm (Fig. 2C) . . . . . *L. longispina*

RESUMEN

Taxonomía y distribución geográfica de los flebótomos en Venezuela. II. El Subgénero *Trichopygomyia* del género *Lutzomyia* (Diptera: Psychodidae) – Se hace una revisión de las especies de flebótomos del género *Trichopygomyia*, registradas hasta el presente en Venezuela. Se describe un nuevo taxon, *Lutzomyia pinna* n. sp. elevándose a 4 el número de especies conocidas para el País: *L. conviti, L. longispina, L. wagleyi* y *L. pinna* n. sp. Se proporciona una clave gráfica para los machos y un mapa de distribución geográfica de estas especies en Venezuela.

Palabras clave: *Lutzomyia – Trychopygomyia – L. pinna* n. sp. – *L. conviti – L. longispina – L. wagleyi* – clave – taxonomía – distribución

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