

**LUTZOMYIA LEWISI, A NEW PHLEBOTOMINE SANDFLY  
(DIPTERA: PSYCHODIDAE) FROM COJEDES STATE, VENEZUELA**

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*The female of a new species, Lutzomyia lewisi is described.*

*Reasons are stated on which the classification proposed by Lewis et al. (1977) is adopted for sandflies recorded in Venezuela. The current controversy over the generic names of phlebotomine sandflies are also discussed.*

In the six sub-families of Psychodidae, only Phlebotominae are haematophagous, and it is only flies on this sub-family which transmit leishmaniasis.

For more than thirty years there has been controversy over the generic names of phlebotomine sandflies (eg. Theodor, 1948, 1965; Fairchild, 1955; Barretto, 1955; Forattini, 1971, 1973; Lewis et al., 1977; Ready et al., 1980, 1981; Williams, 1981). At first, this sub-family contained the single genus *Phlebotomus* Rondani. In 1948 Theodor proposed the division of the Old World and the New World sandflies into four genera: *Phlebotomus* and *Sergentomyia* for the Old World species and *Lutzomyia* and *Brumptomyia* for American forms.

Two new genera, *Warileya* Hertig and *Hertigia* Fairchild, were later described and named by Hertig (1948) and Fairchild (1949). In 1955 Fairchild published one of the most detailed papers on the classification of Neotropical sandflies in which he advocated the retention of the generic name *Phlebotomus* for all but the species placed in the genera *Warileya* and *Hertigia*. In suggesting this he hoped to avoid confusion and keep the name *Phlebotomus* for medically important and bloodsucking psychodid sandflies.

Barretto (1955) accepted the genus *Brumptomyia* of Theodor (1948, 1965) but rejected *Lutzomyia*, placing the majority of New World species in the genus *Sergentomyia*.

Later, Barretto (1961, 1962) and Fairchild (Young & Fairchild, 1974) accepted the four genera proposed by Theodor in 1948. Theodor created the basis for the modern classification of New World sandflies (Theodor, 1965) listing 250 American species. Martins & Morales (1972) raised this number to 292. New radical proposals on the systematics of sandflies were given by Forattini (1971, 1973). He raised four subgenera to generic status and rejected the use of the informal categories "groups" and "series". The sub-family Phlebotominae was therefore divided in nine genera: *Phlebotomus* and *Sergentomyia*, for the Old World, *Lutzomyia*, *Viannamyia*, *Pressatia*, *Pintomyia*, *Psychodopygus* and *Warileya* for the New World.

However, this classification has not yet been accepted by the majority of specialists. Young & Fairchild (1974) considered that his system was based on two few characters and was therefore unnecessarily artificial. Martins, Williams & Falcão (1978) judged that many of the supraspecific taxa defined by Forattini (1971, 1973) were heterogeneous, his definition of taxa cumbersome and obvious natural relationships between species, were obscured.

Lewis et al. (1977) emphasized that, after 285 years since the description of the first sandfly, there was a need to agree to a stable classification of these insects. They suggested the "compromise of retaining well known names of family, sub-family and genera and the use of sub-genera and species-groups as a method to express new ideas". They recommended that the philosophy of Abonnenc & Leger (1976) should be followed to keep generic names to a minimum and their contents broad. A biogeographical concept and practical convenience were the main reasons supporting the division of the sub-family into the five genera (*Phlebotomus*, *Sergentomyia*, *Lutzomyia*, *Brumptomyia* and *Warileya*).

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The argument of academic convenience was also emphasized by Martins, Williams & Falcão (1978). In addition to five genera given by Lewis et al. (1977), Martins, Williams & Falcão (1978) maintained the genus *Hertigia*, as proposed by Young & Fairchild (1974), with the hope of keeping a "common language" among sandflies taxonomists. However, they thought that *Hertigia* should be a junior synonym of *Warileya*. Ready et al. (1980) challenged the "stable classification" proposed by Lewis et al. (1977) and gave reasons for a "flexible classification" of sandflies. They supported the rank of genus for the subgenus *Psychodopygus* and having re-examined the different criteria on which previous systems were based, used a comparative analysis of characters to explain their support.

Ready et al. (1980, 1981) described "exclusive" characters for their proposed genera, i.e. *Warileya*, *Brumptomyia*, *Psychodopygus*, *Phlebotomus* and *Sergentomyia*, but none for *Lutzomyia*. The absence of unique characters for the genus *Lutzomyia* is a weak point in their "comparative" character analysis.

In their historical review of the systematics of sandflies Ready et al. (1980) mentioned Forattini's classification but only treated the genus *Psychodopygus* which Forattini had subdivided in two subgenera: *Psychodopygus* and *Trichophoromyia*. They pointed out that, following Fraiha, Shaw & Lainson (1971) and Fraiha & Ward (1974), the genus *Psychodopygus* proposed by them contained only the species of the former subgenus.

The lack of investigation and discussion of the status of any of the other subgenera recognized by Lewis et al. (1977) and Martins, Williams & Falcão (1978), constitutes another weak point in their argument.

They admitted that consequently "their approach might be attacked as lacking unity" but cite Linnaeus' dictum "it is the genus that gives the characters and not characters that make the genus" in support of their action. Characters are indispensable tools for the taxonomist, but the way in which these tools are used sometimes creates confusion.

The main morphological characters used to distinguish the genus *Brumptomyia* from the genus *Lutzomyia* (i.e. the form of the interocular suture and the arrangement of the horizontal cibarium teeth) undoubtedly constitute a "decided" gap between the two genera, as defined by Mayr (1969). Practical convenience and medical importance were considered and used by Lewis et al. (1977) to support well defined morphological differences. The conclusions they offer are, however, still a "compromise". Although we agree that "classification must not be created solely as a reliable easy to use filing system" (Ready et al., 1980, 1981) the proposition of Lewis et al., appears to me (M.D.F.) to be logical, at least in the short-term until important gaps are filled. For example, it is striking that there are at least 85 Neotropical species of sandflies for which only one sex is known. The parallelism of having two major groups in each hemisphere separated on the basis of one morphological character (the female cibarium) and the use of variation in medical importance "must have looked very attractive" to Lewis et al. (1977) and were criticized by Ready et al. (1980, 1981). However the latter worker failed to offer a more attractive solution and their classification appears illogical and confused.

At the end of their discussion they defined three characters to distinguish *Psychodopygus* from *Brumptomyia*. These work perfectly, being the same characters, mentioned above, used to separate *Brumptomyia* from *Lutzomyia*. They also give three "distinctive" characters to separate *Psychodopygus* and *Lutzomyia*, two of which overlap in practice. These are the "mountainlike" or "volcanic" exochorionic sculpturing of eggs, and the abdominal, mostly recumbent abdominal setae on tergites 2-6 with erect setae restricted to segments 2-4, "characteristic" of *Psychodopygus*; these characters, however, are also shown by *L. flaviscutellata* of the subgenus *Nyssomyia*.

Although Ready et al. (1980, 1981) themselves admit that "the variable nature of the palpal formula has persuaded taxonomists to assign little weight to palpal characters" they use, as an "exclusive" character for *Psychodopygus*, the 5th decidedly short palpal segment. It is indeed true that this character separates *Psychodopygus*, on the one hand from *Brumptomyia*, *Phlebotomus* and *Sergentomyia*, all three of which have 5th palpus segments which are constantly long. However, the monotypic subgenus *Hertigia* of the genus *Warileya*, and some species in the genus *Lutzomyia*, have a short 5th palpal segment and this character cannot be considered "exclusive" to *Psychodopygus*.

The full comparison of *Psychodopygus* with other subgenera and species groups is indispensable if it is to be raised to the rank of genus. Moreover this rise in status is difficult to justify at present because the ranking of subgenera and groups is far from stable (Lewis et al., 1977; Martins, Williams & Falcão, 1978). It could be argued that several other subgenera have as much right as *Psychodopygus* to be raised to generic rank. The imbricated spermathecae of *Psychodopygus* are no more distinctive than the paired sclerotized structures of *Viannomyia* spermathecae or the presence of spines on the hind femur in *Pintomyia*.

To conclude, morphology, biogeography, phylogeny, practical convenience and medical importance are sufficiently strong reasons at the moment to support the classification proposed by Lewis et al. (1977)

and followed by Martins, Williams & Falcão (1978), that is five genera: *Phlebotomus* and *Sergentomyia* for Old World flies and *Lutzomyia*, *Brumptomyia* and *Warileya* for New World flies.

For these reasons this system has been adopted in our studies on Venezuelan sandflies (Feliciangeli, 1980).

In this paper we describe the female of a new species belonging to the subgenus *Lutzomyia*. All measurements are given in millimeters.

*Lutzomyia lewisi* n.sp. (Fig. 1-7)

**Female** (n = 3). **Head:** length 0.36 (0.22-0.38), width 0.31-0.33, length/width 1.08-1.16. Eyes separated by 0.13 or by distance ca. 10 facet diam. **Antennae:** Flagellomere I = segment 3 0.17 (0.16-0.19) long = length of II + III. Ascoïds of FII simple and short. **Palps** (n = 2): length of segments: 1, 0.035-0.038; 2, 0.113-0.093; 3, 0.150-0.138; 4, 0.138-0.123; 5, 0.330, palpal formula: 1, 2, 4, 3, 5. **Labrum** length (L): 0.22 (0.20-0.23). Index FI/L 0.77. **Cibarium** with 4 straight triangular hind teeth and 4-5 vertical teeth at each side of the middle line; with an odd medium tooth-like process. Chitinous arch absent, pigmented patch comparatively dark. **Pharynx** as figured 0.5 mm long. **Pleura** with 5-12 upper and 3-5 lower episternal setae. **Wing:** length 1.74 (1.73-1.75), width 0.50 (0.45-0.58). Length of veins: alpha 0.29, beta 0.30, delta 0.11, gamma 0.26, indices alpha/beta = 0.97, alpha/delta = 2.66, alpha/gamma = 1.12. **Legs:** length of femora, tibiae, basitarsis and tarsi. (Slide no. 2059-A): foreleg: 0.70, 0.63, 0.37, 0.58, midleg: 0.66, 0.77, 0.41, 0.60, hindleg missing: (Slide no. 2059-C) foreleg and midleg missing, hindleg: 0.72, 0.92, 0.49, 0.65. **Spermathecae** as shown (Fig. 7), large and sausage-like, individual ducts long, common duct not visible.

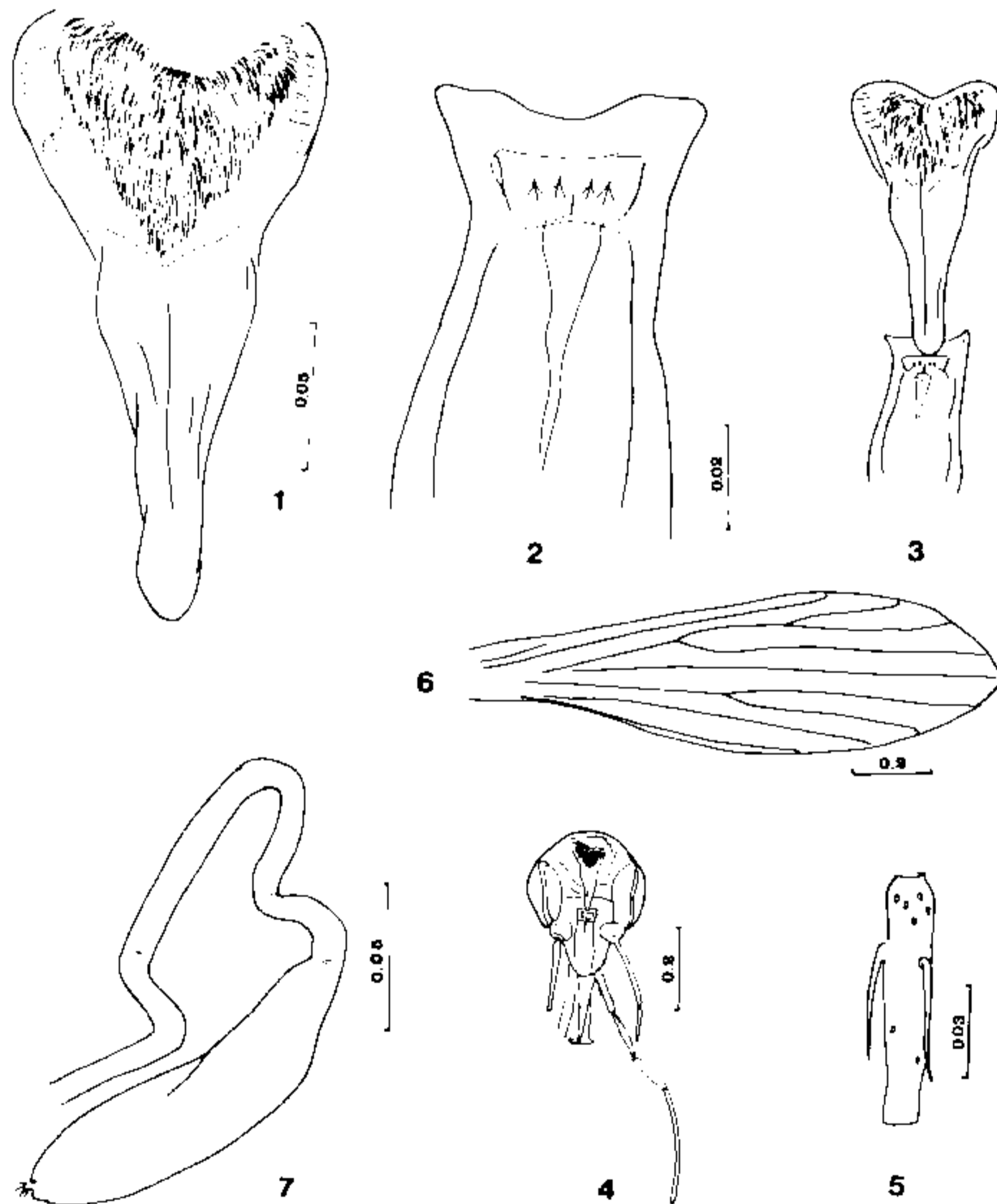


Fig. 1-7: *Lutzomyia lewisi* n.sp. Female. 1. Pharynx; 2. Cibarium; 3. Pharynx and Cibarium; 4. Head; 5. Flagellomere II; 6. Wing; 7. Spermatheca.

**Material examined:** Holotype ♀, Slide no. 2059-A, (British Museum, N.H.), 2 Paratype ♀♀: Slide no. 2059-B (University of Carabobo, Parasitología, Maracay, Venezuela) and Slide no. 2059-C (University of Carabobo, Parasitología, Valencia, Venezuela). Type locality: La Vaquira, Municipio (= county) El Pao, Cojedes State, Venezuela, 20 June, 1977, Collector: Elio Fernández.

## DISCUSSION

This species differs from other *Lutzomyia* mainly in the peculiar shape and armature of its spinose pharynx. It somewhat resembles the pharynx of the species of the *cayennensis* group, series *atroclavata*, *L. atroclavata* (Knab, 1913) and *L. venezuelensis* (Floch & Abonnenc, 1948); however, it differs from those in the presence of the crowded spines over the transverse ridges. In addition, the spermathecae are undoubtedly distinct. It is also worth mentioning that the odd medial "tooth" in the cibarium somewhat resembles that of *L. vexator* (Coquillet, 1907) and *L. vindicator* (Dampf, 1944), but not in other characters.

On the basis of these considerations we tentatively assign this species to the *cayennensis* group, series *atroclavata*, pending the discovery of the male. *L. lewisi* of La Vaquira was collected in a tree hole during the day, together with *L. longipalpis* (3♂♂ and 4♀♀), *L. cayennensis* (5♂♂ and 3♀♀) and *L. rangeliana* (1♂ and 5♀♀).

It is with great pleasure that I (M.D.F.) name this species in honour of Dr. David J. Lewis whose invaluable orientation in the study of the taxonomy of sandflies has roused my curiosity and enthusiasm for this group of insects.

## RESUMO

A fêmea de uma nova espécie, *Lutzomyia lewisi* é descrita.

A argumentação pela qual se adota a classificação de Lewis et al. (1977) para os flebótomos da Venezuela é apresentada, assim como se discute a controvérsia atual sobre a nomenclatura genérica dos flebótomos.

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