

TAXONOMIC REVIEW OF *LUTZOMYIA WALKERI* (NEWSTEAD, 1914)
[= *LUTZOMYIA MARAJOENSIS* (DAMASCENO & CAUSEY, 1944)]
AND THE RESURRECTION OF *LUTZOMYIA DUBITANS* (SHERLOCK, 1962)
(DIPTERA : PSYCHODIDAE)

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Examination of the holotype of Lutzomyia marajoensis (Damasceno & Causey, 1944) shows this species to be identical to Lutzomyia walkeri (Newstead, 1914). The name Lutzomyia dubitans (Sherlock, 1962) is resurrected for another sand fly which has been incorrectly named L. marajoensis since 1961. Newly discovered structural differences between males and females of L. walkeri from L. dubitans are presented.

The discovery of *L. walkeri* (Newstead, 1914) in Apure State, Venezuela, led to the examination of the taxonomic literature of this species and *L. marajoensis* (Damasceno & Causey, 1944). Additional studies of type specimens and newly collected material were made.

L. walkeri (Newstead, 1914)

In a recent revision of the psychodid flies of Colombia, Young (1979) pointed out that *L. walkeri* and *L. marajoensis*, often considered to be closely related, are easily distinguishable. In a remounted male of the syntype series of *L. walkeri*, he observed the complex aedeagus with a dorsal posterior cylindrical projection not noted by Lewis (1967) in the redescription of this species. Sherlock (1962) in the description of *L. gasti* a junior synonym of *L. walkeri* (Young, 1979) and Llanos (1973) in her report of Peruvian specimens of *L. walkeri*, also noted this character.

L. marajoensis (Damasceno & Causey, 1944)

Fairchild & Hertig (1961), after examining specimens of *L. marajoensis* from Venezuela, Colombia, Trinidad and Panama, and the holotype from Brazil, suggested that *L. marajoensis* might only represent a geographic variant of *L. walkeri* and stated that differences between the two "are very slight", but, they refrained from synonymizing them. Their drawings of *L. marajoensis* are different from those of Damasceno & Causey's description in that the two basal spines of the style are situated at about the middle of the segment, more or less the same level. The same feature was noted by Pifano, Ortiz & Alvarez (1962) in Venezuelan specimens of this species.

Sherlock (1962), after examining Colombian specimens from the same collection seen by Fairchild & Hertig (1961), described a new species which he named *Lutzomyia dubitans*. His description and Fairchild & Hertig's (1961) drawings of *L. marajoensis* are essentially identical. When comparing his specimens of *L. dubitans* with the original description of *L. marajoensis*, Sherlock noted that in *L. dubitans* there were two distal spines and two basal spines on the style in contrast to three distal spines and one basal spine on the style of latter species.

Forattini (1973) considered both *L. marajoensis* and *L. dubitans* as synonyms of *L. walkeri* because of "the lack of consistency of characters which might raise them to the species-category". Martins, Williams & Falcão (1978) and Young (1979) maintained *L. walkeri* and *L. marajoensis* as separate species while treating *L. dubitans* as conspecific with *L. marajoensis*.

Examination of collected specimens and types

From collections made in Apure State, Venezuela, eight out of 23 males (34.7%) with a

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posterior projection of the aedeagus were identified as *L. walkeri*. The remaining specimens had no such visible projection of their aedeagi.

The original and subsequent descriptions of *L. walkeri* and *L. marajoensis* show such similarity that the lectotype and paralectotypes of *L. walkeri* (British Museum, Natural History) were compared with *L. marajoensis* holotype and a paratype, both mounted in the same slide (United States, National Museum).

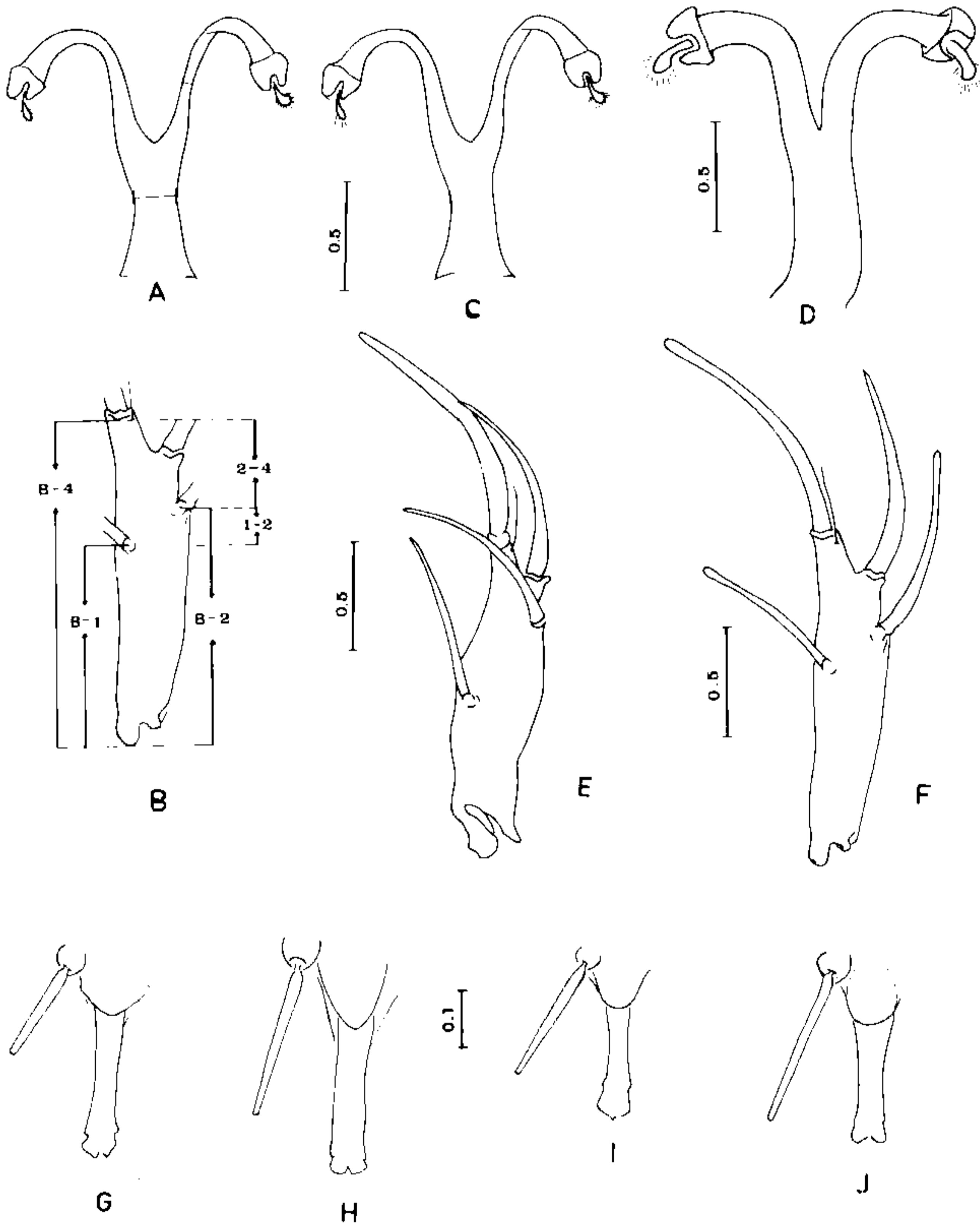


Fig. 1: *Lutzomyia* (*migonei* group) – A and B: measurements used for spermathecae ducts and styles; C: spermathecae of *L. walkeri*; D: spermathecae of *L. dubitans*; G to J: labra and flagellomeres; I-G: *L. walkeri* female; H: *L. dubitans* female; *L. walkeri* male; *L. dubitans* male.

All specific characters were identical including the posterior projection of the aedeagus, leading to the conclusion that *L. marajoensis* (Damasceno & Causey, 1944) is synonymous with *L. walkeri* (Newstead, 1914), as suggested by Forattini (1973).

At the same time, *L. marajoensis*, figured by Fairchild & Hertig (1961), and *L. dubitans*, described by Sherlock (1962) from the same collection, appear to be identical but are different from the *L. marajoensis* male holotype and paratype. Therefore, the name *L. dubitans*, is the first valid name of a different fly, incorrectly called *L. marajoensis* since 1961.

Other structural differences between *L. walkeri* and *L. dubitans* are discussed as follows.

Males

Two ratios were compared and statistically analyzed, using Student's t test, based on specimens that could be adequately measured.

1. Flagellomere I (FI) length/labrum-epipharynx length (FI/L). Six males from one locality of Apure State, Guaramaco, and six males from different places in Trujillo and Cojedes States, Venezuela, were compared with six males of *L. dubitans* (formerly *L. marajoensis*) from different localities of Venezuela.

FI/L measurements of flagellomere I, labrum lengths and the ratio FI/L (Table I) did not show statistical differences between *L. walkeri* from Guaramaco, Apure State and the group from different localities of Trujillo and Cojedes States.

TABLE I

Comparison of Flagellomere I (FI) and Labrum (L) length in males of *L. walkeri* and *L. dubitans*

Specimen No	Length of Flagellomere I (FI) and Labrum (L) in μm								
	<i>L. walkeri</i> * (A)			<i>L. walkeri</i> ** (B)			<i>L. dubitans</i> *** (D)		
	FI	L	FI/L	FI	L	FI/L	FI	L	FI/L
1	198.24	207.68	0.95	212.40	224.20	0.95	306.80	188.80	1.63
2	217.12	224.20	0.97	174.64	177.00	0.99	295.00	217.12	1.36
3	212.4	214.76	0.99	219.48	200.60	1.09	273.76	184.08	1.49
4	212.4	195.88	1.08	226.56	221.84	1.02	318.60	188.80	1.69
5	174.64	202.96	0.86	212.40	214.76	0.99	271.40	205.32	1.32
6	198.24	200.60	0.98	221.84	212.40	1.04	278.48	207.68	1.34
x	202.28	207.68	0.97	211.22	208.41	1.01	290.67	198.63	1.47
o	15.66	10.34	0.07	18.74	17.51	0.05	19.31	13.21	0.16

* Apure State

** Cojedes and Trujillo States

*** Carabobo, Cojedes and Apure States

In contrast, highly significant differences were observed in the length of the flagellomere I ($t = 9.42$; $df = 16$; $P < 0.001$) and the corresponding ratio FI/L ($t = 10.35$; $df = 16$; $P < 0.001$) between *L. walkeri* (pooled) and *L. dubitans*.

In *L. walkeri*, FI length is about the same as labrum length ($FI/L = 0.99 \pm 0.06$) but in *L. dubitans*, FI is about one and a half times as long ($FI/L = 1.45 \pm 0.13$) (see Figs. 1I, 1J).

2. Distance between spine 1 and spine 2 in the style/total length of the style (1-2/B-4) (see Fig. 1B). Fourteen males from Guaramaco and thirteen males from different places in Trujillo and Cojedes States were compared with nine *L. dubitans* (six newly collected in Venezuela and three deposited at the British Museum, two Venezuelan and one Colombian).

The scatter diagram (Fig. 2) shows the distance between basal spines in relation with the total length of the style. Two groups of points are clearly separate indicating that basal spines are closer in *L. dubitans* ($1-2/b-4 = 0.16 \pm 0.02$) than in *L. walkeri* ($1-2/B-4 = 0.24 \pm 0.02$) ($t = 13.23$; $df = 36$; $P < 0.001$) (see Figs. 1E, 1F). This difference is therefore considered to be diagnostic.

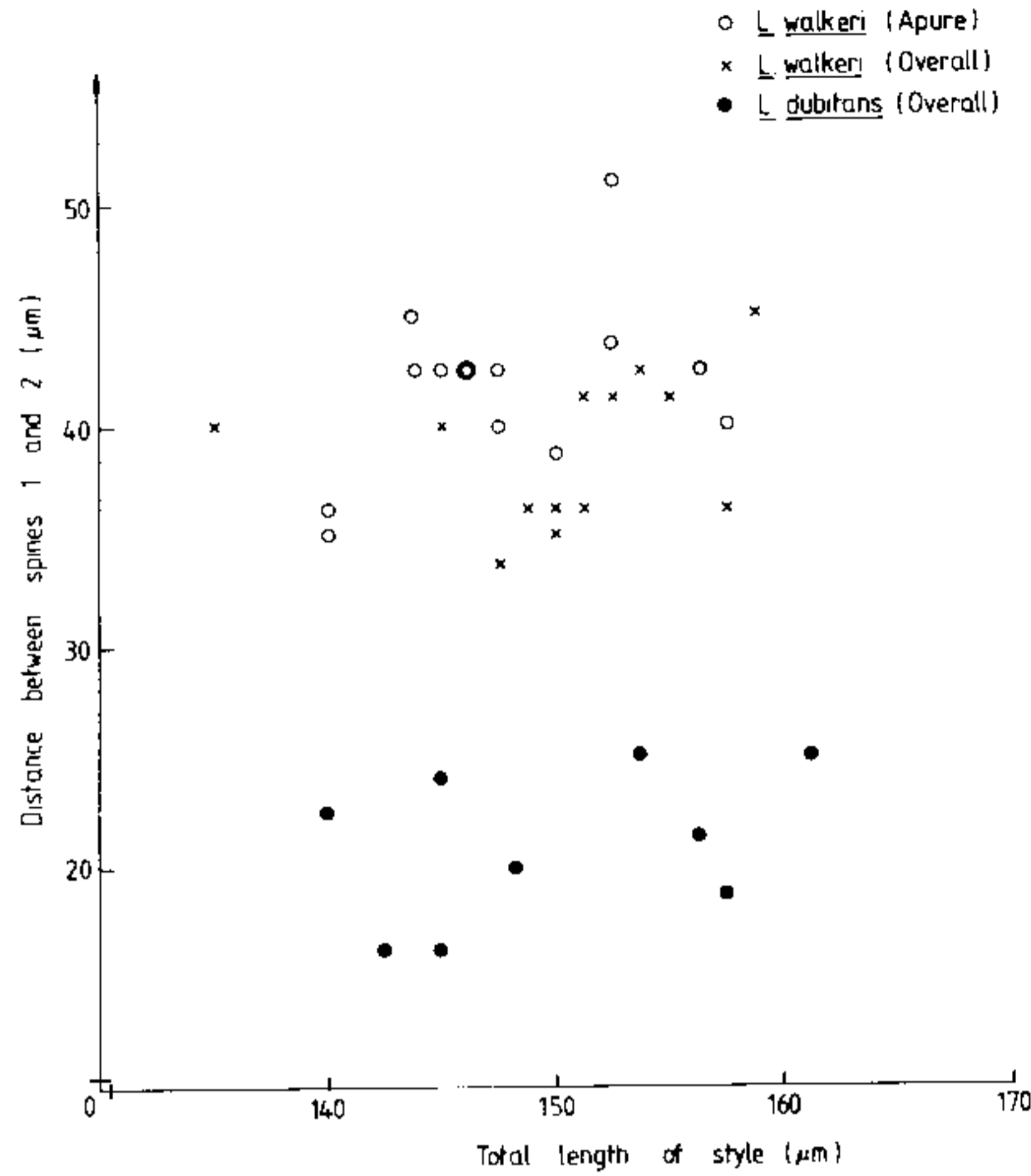


Fig. 2: distance between spines 1 and 2 plotted against the total length of style.

Females

Females of *L. walkeri* and *L. dubitans* are easily distinguished by the ratio of the individual sperm duct/common duct width (Young, 1979) (see Fig. 1A). However, the FI/L ratio was tested looking for an additional diagnostic aid for females in which the sperm ducts are shrunken or invisible. The FI/L ratio was compared between five *L. dubitans* females and five *L. walkeri* females, taken at random from collections made in Apure State.

FI/L measurements and comparison of flagellomere I and labrum lengths in females are given in Table II.

FI length also shows considerable difference between *L. walkeri* and *L. dubitans* ($t = 9.21$; $df = 8$; $P < 0.001$) and the ratio FI/L is smaller in *L. walkeri* ($= 0.73 \pm 0.06$) than in *L. dubitans* ($= 0.96 \pm 0.02$) ($t = 8.24$; $df = 8$; $P < 0.001$) (Figs. 1G, 1H).

TABLE II

Comparison of Flagellomere I (FI), Labrum (L) length and ratio FI/L in females of *L. walkeri* and *L. dubitans*

Specimen No	Length of Flagellomere I (FI) and Labrum (L) in μm					
	<i>L. walkeri</i>			<i>L. dubitans</i>		
	FI	L	FI/L	FI	L	FI/L
1	207.68	287.92	0.72	271.40	292.64	0.93
2	177.00	271.40	0.65	261.96	271.40	0.97
3	198.24	252.52	0.79	280.84	290.28	0.97
4	177.00	224.20	0.79	261.96	273.76	0.95
5	181.72	261.96	0.69	247.80	252.52	0.98
x	188.32	259.60	0.73	264.79	276.12	0.96
o	13.90	23.71	0.06	12.30	16.26	0.02

Material examined

L. walkeri. *Brazil*. Rio Abuna, Bolívia-Brazil Boundary, 1913; 1 ♂ lectotype, 5 ♂♂ and 2 ♀♀ paralectotypes (deposited at the British Museum, N.H.). *Venezuela: Apure State*: 4 ♂♂, 9 ♀♀, Guaramaco (County Codazzi) 27 IV 1981; 18 ♂♂, 9 ♀♀, Guaramaco, 29 IV 1981; 1 ♂, El Novillo (Codazzi) 24 IV 1981; 1 ♀, Pto. Paez (Codazzi) 24 IV 1981. Collector: Mr. J. Pulido. *Cojedes State*: 1 ♂, Boca de Cero (El Pao), 5 XI 1980; Col.: Mr. P. Aular; 1 ♂, Las Rosas (San Carlos) 2 V 1979. *Trujillo State*: 1 ♂, El Mamón (Candelaria), 13 VIII 1976; 2 ♂♂, Las Cocuizas (La Concepción), 25 XI 1975; 6 ♂♂, Sabana Grande (Candelaria), 22 V 1975; 1 ♂, same locality, 4 VI 1975; 3 ♂, 1 ♀, El Volcán (Monseñor Jauregui), 6 IX 1972; Col.: Mr. P. Manzanilla.

L. dubitans. *Brazil*. Ilha de Marajó, Mpio. Ponta de Pedras, 1943: 1 ♂ holotype and 1 ♂ paratype (deposited at the National Museum, Washington). *Venezuela: Carabobo State*: 2 ♂♂ San Esteban, 2 II 1981; 1 ♀ San Esteban, 9 II 1981; 1 ♂ Trincheras, 24 III 1977; 1 ♀, La Glorieta (Los Guayos) 13 XI 1972; 2 ♀♀ La Belén (Naguanagua) 4 XII 1972; Col.: Mr. E. Fernández. *Cojedes State*: 1 ♂, Zambrano (El Pao) 30 XI 1980; 1 ♀, Las Rosas (San Carlos), 2 V 1979; 1 ♂, Las Rosas, 24 IV 1979. Col.: Mr. E. Fernández. *Apure State*: 1 ♀ Sta. Lucia (Achaguas), 24 VI 1981. Col.: Mr. J. Pulido. 2 ♀♀ from Venezuela, and 1 ♂ from Colombia (deposited at the British Museum, N.H.).

RESUMO

Examinando o holótipo de *Lutzomyia marajoensis* (Damasceno & Causey, 1944), observou-se que essa espécie é idêntica a *Lutzomyia walkeri* (Newstead, 1974). O nome de *Lutzomyia dubitans* (Sherlock, 1962) é ressuscitado para outro flebotomo que havia sido incorretamente denominado *L. marajoensis* desde 1961. São descritas novas estruturas morfológicas úteis para distinguir machos e fêmeas de *L. walkeri* de *L. dubitans*.

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