

## RESEARCH NOTE

## Anomalies of *Lutzomyia intermedia* (Lutz & Neiva, 1912) (Diptera, Psychodidae, Phlebotominae)

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Morphological anomalies have been recognized in several American and European Phlebotomine sandflies. E Abonnenc et al. (1971 *Cahiers ORSTOM série Ent Med Paras* 9: 307-316) and later JP Dedet et al. (1984 *Cahiers ORSTOM série Ent Med Paras* 22: 99-127) described anomalies in African sandflies. Abonnenc et al. (*loc. cit.*) listed most references to anomalies. CB Marcondes [1997 *Morfometria e DNA Mitocondrial de Populações Sul Americanas de Lutzomyia intermedia* (Lutz & Neiva, 1912) (Diptera, Psychodidae, Phlebotominae), PhD Thesis, UF Paraná, xxiv+260 pp.] and CB Marcondes et al. (1998 *Mem Inst Oswaldo Cruz* 93: 203-204) listed most references to anomalies. JA Rioux et al. (1965 *Ann Soc Ent Franç* 1: 615-617, 1974 *Ann Paras Hum Comp* 49: 371-372), FB Almeida (1970 *Bol INPA* 1: 1-5), B Chaniotis (1971 *J Med Ent* 8: 459), RW Ashford (1974 *J Med Ent* 11: 605-616), G Vattier-Bernard (1975 *Cah ORSTOM sér Ent Méd Parasitol* 13: 115-116), H Addadi and JP Dedet (1977 *Arch Inst Pasteur Algérie* 52: 135-138), P Dancescu et al. (1979 *Arch Inst Pasteur Tunis* 56: 53-56), N Léger et al. (1982 *Ann Paras Hum Comp* 57: 105-107), JM Ubeda Ontiveros et al. (1983 *Rev Ibér Parasitol* 43: 213-218), E Martinez-Ortega and E Conesa Gallego (1987 *An Biol Sección Biol An* 11: 55-60), H Kassem et al. (1988 *J Egypt Public Hlth Assoc* 63: 209-213), E Martinez-Ortega et al. (1989 *Ann*

*Paras Hum Comp* 64: 46-52), J Gallego et al. (1993 *Res Rev Parasitol* 51: 51-56, 1994 *Parasite* 1: 283-285) also described anomalies in sandflies, not included in the above cited publications.

Apart from the description, for *Lutzomyia neivai* (Pinto, 1926), of a female with three spermathecae (HH Taniguchi et al. 1992 *Rev Inst Adolfo Lutz* 52: 105-106) and of another with anomalous wing venation (Marcondes et al. *loc. cit.*), no other anomaly was described in insects of the *L. intermedia* species complex, as defined by CB Marcondes (1996 *Mem Inst Oswaldo Cruz* 91: 457-462).

Symmetrical anomalies in the number of spines of style, as observed for *L. longipalpis* (Lutz & Neiva, 1912) by IA Sherlock (1958 *Rev Bras Biol* 18: 433-437), can jeopardise the identification (A Dampf 1945 *Bol Ent Ven* 4: 153-159, Sherlock 1958 *loc. cit.*) and induce the description of false new species (D Cazorla et al. 1988 *Bol Dir Malar San Amb* 28: 91-98). *L. alphabetica* was described with six spines on the style by JO Coutinho and MP Barretto (1940 *Ann Fac Med USP* 16: 193-206). Afterwards, MP Barretto (1943 *Rev Med Cir Brasil* 51: 703-710) indicated that the usual number of spines is five. The study of anomalies, mostly if associated to populational and genetic features, can be very useful.

The following anomalies were observed in *L. intermedia*:

A male [code in Marcondes 1997 (*loc. cit.*): ESVN-25M] from Venda Nova do Imigrante, State of Espírito Santo, had an supplementary subapical spine on each style. The distances of the spines from the base of the style are shown in the Table. A female from the same municipality (ESVND-31F) had nine cibarial horizontal teeth.

A male (RJR-12M) from Rio Bonito, State of Rio de Janeiro, had the third spine of the style on a protuberance 6 mm in length. A male (RJR-14M) from the same municipality had a constriction in the 5th palpomere.

A male (Coll. Mangabeira-1363, Instituto Oswaldo Cruz Collection) from Governador Valadares, State of Minas Gerais, had an supplementary spine in a style, at 124.8 mm from the base.

A male (RJIT-2M) from Itaguaí, State of Rio de Janeiro, had a conical protuberance in the anterior face of a posterior femur, 137.2 mm from the proximal extremity. Another male (RJIT-4M) from the same municipality had, on one femur, a similar protuberance at 231.6 mm from that extremity and, in the other, two small protuberances, 258.6 mm and 318.4 mm from the extremity.

The specimens from Venda Nova Nova do Imigrante are still in the local collection; the others were sent back to the researchers cited below.

TABLE

Dimensions of the styles and distances of their spines from their proximal extremity in an anomalous specimen of *Lutzomyia intermedia* from Venda Nova do Imigrante, State of Espírito Santo, with an extranumerary spine, compared to the mean of other 31 specimens from the same municipality (code ESVN) (in mm)

Dimensions/ distances	Left style	Right style	Males ESVN
Total length	148.9	149.6	145±6.5
Maximum width	34.42	38.96	34.5±1.74
First/second spine	86.28	89.62	83.95±6.19
Third spine	112.1	115	117.3±7.72
Extraordinary spine	135.5	139.1	-

The presence of the supplementary spines in the male from Venda Nova do Imigrante could lead, in a less known insect species and region, to the description of a new species.

MD Feliciangeli et al. (1985 *Acta Amaz* 15: 157-166) and Cazorla et al. (1988 *loc. cit.*) observed odd numbers of cibarial horizontal teeth in sandflies from Venezuela. The number of these teeth varied in *L. intermedia s. l.*, but it was even in all the other insects (Marcondes 1997 *loc. cit.*). All the anomalies in the palps cited by Abonnenc et al. (*loc. cit.*)

were observed in the third segment, unlike the above from Rio Bonito.

The observed frequency of anomalies in *L. intermedia s. l.* (9:705 or 128: 10,000) was much higher than that of *L. longipalpis* [24:80,030 or 3:10,000 (Sherlock 1958 *loc. cit.*)] and of several species from Venezuela [11:10,000 (Cazorla et al. 1988 *loc. cit.*) and 22: 10,000 (D Cazorla et al. 1991 *Bol Ent Ven* 6: 11-18)]. *L. bahiensis* showed such a great variability in the number of setae on the coxite and in the number of spines on style, that it is difficult to define which are the anomalous specimens (IA Sherlock 1963 *Rev Bras Biol* 23: 49-53). There was no tendency for an aggregation of the anomalous insects in any region, as observed by Abonnenc et al. (*loc. cit.*) and J Gallego et al. (1991 *Res Rev Paras* 51: 51-56).

The genetics and the possible importance of these anomalies, mostly those in the genitalia, for the copulation and survival should be evaluated. Studies of great numbers of sandflies (e. g., M Maroli et al. 1994 *Parassitologia* 36: 251-264) should include or be supplemented by the description of the possibly observed anomalous insects.

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