

ABNORMAL SPERMATHECAE NUMBERS IN PERUVIAN SANDFLIES (DIPTERA: PSYCHODIDAE).

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ABSTRACT – We report and illustrate two abnormal spermatheca numbers found in Peruvian sandflies, a supernumerary spermatheca in *Lutzomyia carrerai* and the absence of one spermatheca in *L. amazonensis*.

Key words: *Lutzomyia*, abnormal spermatheca, Peru.

Números Anormais de Espermatecas em Flebótomos Peruanos (Diptera: Psychodidae).

RESUMO – Apresentamos e ilustramos duas espermatecas de flebótomos peruanos registradas com números anormais; uma espermateca supernumerária em *Lutzomyia carrerai* e a falta de uma espermateca em *L. amazonensis*.

Palavras chave: *Lutzomyia*, espermatecas anormais, Peru.

INTRODUCTION

Anomalies in the number of different sandfly (Diptera: Psychodidae) structures are most frequently found in males; supernumerary style spines are most common. In females, a frequent abnormality found is in the number of cibarial teeth (FELICIANGELI *et al.*, 1985). Anomalies in the shape or in the number of spermathecae are reported to be associated with gynandromorphism, such is the case of the obstruction of one individual duct reported by SHERLOCK (1958) and the undevelopment of one spermatheca reported by RIOUX *et al.* (1974) and HARRAT *et al.* (1993).

Female *Lutzomyia* sandflies normally have two spermathecae. In this paper we report two cases of abnormal numbers of spermathecae detected in Peruvian *Lutzomyia* sandflies from the tropical forest Eastern to the Andean Cordillera.

MATERIALS AND METHODS

The sandfly material The *Lutzomyia* individuals used for this study were identified and separated from the sandfly collection deposited in the Entomology Laboratory of the Instituto de Medicina Tropical Alexander von Humboldt, Universidad Peruana Cayetano Heredia, Lima, Perú. The specimens separated were: one specimen of *Lutzomyia carrerai* (BARRETTO, 1946) with a supernumerary spermatheca and one specimen of *L. amazonensis* (ROOT, 1934) with the absence of one spermatheca.

The specimens were clarified with NaOH 10%, treated with lactophenol (3:4, v/v) and mounted in slides with Canada Balsam.

RESULTS AND DISCUSSION

Two specimens of *Lutzomyia* spp. from Perú were found with abnor-

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mal spermatheca numbers. A brief description of them follows:

1.- A female specimen of *Lutzomyia carrerai* was found with one supernumerary spermatheca (Fig. 1a). The shape of the abnormal third spermatheca differs from the other pair. Measurements of all three spermathecae differ from those of normal individuals caught from the same place (Table 1). The imbricated rings of the third abnormal spermatheca are irregularly inflated, the individual duct is connected directly to the middle of the common duct of the other pair. The

Table 1. Measurements of spermathecae Peruvian *Lutzomyia carrerai* from normal individuals (NI) and, from a specimen with supernumerary spermathecae, the normal pair (NP) and the supernumerary spermatheca (SS). The measures are given in μm .

	NI	NP	SS
Number of rings	9-10	10,1	8
Head length	8.6*	7.6**	7.6
Spermatheca length	46.7	37.2	32.6
Spermatheca width	15.9	17.4	13.9
Individual duct length	23.9	17.4	16.3
Individual duct width	6.4	8.1	7

*, Mean of spermathecae of 10 specimens.

** , Mean of the 2 spermathecae.

spermatheca body and the individual duct are smaller in the third abnormal spermatheca than the other pair. From the normal 4 horizontal cibarial teeth, only vestiges of a central one are present (Fig. 1b).

This specimen was found in a collection of 482 females of *L. carrerai* from Coloradito (Pillcopata, Cuzco), at 1000 m above sea level, it was caught using CDC light traps in primary rain forest, on August 9, 1989.

2.- A female specimen of *Lutzomyia amazonensis* was found with the absence of one spermatheca (Fig. 2). The spermatheca present is indistinguishable from that of normal individuals. The individual duct appears to be longer, but its basal portion represents the common duct of the normal specimens.

This specimen was found in a collection of 69 females of *L. amazonensis* from Veinticinco de Diciembre (Yurimaguas, Loreto), at 220 m above sea level, and was caught using a Shannon trap with protected human bait, placed in secondary forest, on July 3, 1991.

The mechanisms causing abnormal spermatheca numbers in sandflies, or the physiological consequences and implications for their role as *Leishmania* vectors were not described. Both species mentioned here are highly anthropophilic, and *L. carrerai* was found naturally infected with *Leishmania braziliensis* (DESJEUX, 1992), and *L. amazonensis* was recorded infected with flagellates (LAINSON *et al.*, 1973).

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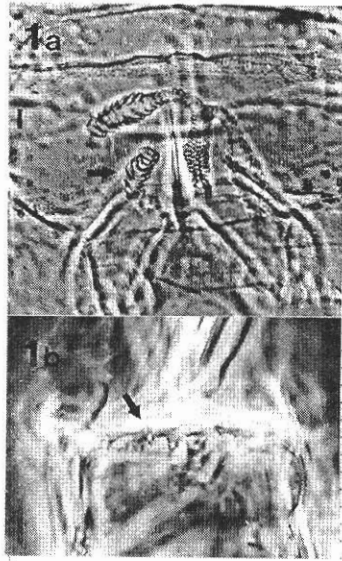


Figura 1a. Last abdominal portion of the female specimen of *Lutzomyia carrerai* from Coloradito (Pillcopata, Cuzco) showing a supernumerary spermatheca (arrow). **Figura 1b.** The cibarium of the same specimen with only vestiges of horizontal teeth (arrow).

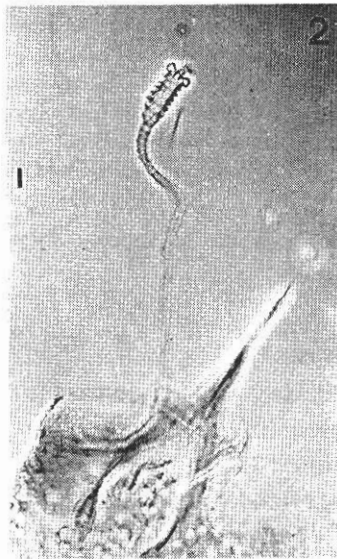


Figura 2. Last abdominal portion of the *Lu. amazonensis* female specimen from Veinticinco de Diciembre (Yurimaguas, Loreto) showing one spermatheca lacking. The bars are equivalent to 10 μ m.

Literature Cited

- DESJEUX, P. 1992. *Information on the Epidemiology and control of the Leishmaniasis by country or territory*. Geneva, World Health Organization. 47 pp.
- FELICIANGELI, M. D.; ORDOÑES, R.; AGUILAR, C. M. 1985. Anomalies of sandflies in Venezuela. *Acta amazonica*, 15: 157-166.
- HARRAT, Z.; LAMBERT, M.; TABET-DERRAZ, O.; DEDET, J. P. 1993. Apropos d'un cas de gynandromorphisme chez *Sergentomyia minuta parroti* (Adler & Theodor, 1927) (Diptera, Psychodidae). *Bulletin de la Societe Entomologique de France*, 98: 459-462.
- LAINSON, R.; SHAW, J. J.; WARD, R. D.; FRAIHA, H. 1973. Leishmaniasis in Brazil. IX. Considerations on the *Leishmania braziliensis complex*: Importance of sandflies of the genus *Psychodopygus* (Mangabeira) in the transmission of *L. braziliensis braziliensis* in North Brazil. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 67: 184-196.
- RIOUX, J. A.; ABONNENC, E.; BAUDONY, J. P. 1965. Un cas de gynandromorphisme chez *Phlebotomus ariasi* Tennoir (Diptera: Psychodidae). *Bulletin de la Societe Entomologique de France (NS)*, 3: 615-617.
- SHERLOCK, I. A. 1958. Anomalias de *Phlebotomus longpalpis* Lutz & Neiva, 1912 (Diptera: Psychodidae). *Revista brasileira de Biologia*, 18: 433-437.

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