

SCIENTIFIC NOTE

Phlebotominae Fauna (Diptera: Psychodidae) in the Department of Amazonas, Colombia

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Fauna Flebotomínea (Diptera: Psychodidae) en el Departamento del Amazonas, Colombia

RESUMEN - Durante el desarrollo de un estudio epidemiológico para evaluar el riesgo de infección por *Leishmania*, se realizó una evaluación entomológica y el inventario de la fauna flebotomínea utilizando trampa Shannon y capturador bucal sobre cebo humano, en la comunidad indígena Tikuna residentes a orillas del río Pupuña, afluente del río Putumayo, departamento del Amazonas. En este mismo lugar se capturaron 560 ejemplares, de flebotomíneos pertenecientes a 20 especies, entre las cuales se identificaron por primera vez para Colombia a *Lutzomyia reducta* Feliciangeli, Ramirez-Pérez & Ramirez y *Lutzomyia carrerai carrerai* (Barreto) y *Lutzomyia nocticola* Young como nuevos registros para la zona. Se presenta un inventario actualizado de las especies de flebotomos del departamento del Amazonas Colombia.

PALABRAS-CLAVE: Tikuna, flebotomíneo, *Lutzomyia*, Río Pupuña

ABSTRACT - During the execution of an epidemiological study to assess the risk of *Leishmania* infection, an entomological evaluation and an inventory of phlebotomine fauna was made. The captures of phlebotomines were carried out with Shannon type traps and aspirators which collected the sand flies on human bait, in the Tikuna native community, on the banks of the Pupuña River an affluent of the Putumayo River among the department of Amazon. Five hundred and sixty phlebotomine specimens belonging to 20 species were captured in this place and the presence of *Lutzomyia reducta* Feliciangeli, Ramirez-Pérez & Ramirez recorded in Colombia for the first time and *Lutzomyia carrerai carrerai* (Barreto) and *Lutzomyia nocticola* Young were identified as new records for the zone. An updated inventory of phlebotomine species in Amazon department of Colombia is included.

KEY WORDS: Tikuna, sand fly, *Lutzomyia*, Pupuña River

Lutzomyia are insects of the Psychodidae family belonging to the Phlebotominae sub-family (Kettle 1984) and are responsible for the transmission of leishmaniasis, bartonellosis and arboviral diseases. Nearly 460 species of *Lutzomyia* have been reported in the Americas and approximately 30 of them have been incriminated as vectors of leishmaniasis (Desjeux 1991, Young & Duncan 1994).

Ferro (2000) has reported 129 species of *Lutzomyia* in Colombia occurring from 0 to 2,400 masl, in a wide diversity of ecosystems from very humid tropical forest to dry tropical forest (Corredor *et al.* 1990). Only seven of the 129 species of *Lutzomyia* (Ferro 2000) recorded in the country have been incriminated as vectors: *Lutzomyia longipalpis* (Lutz & Neiva), *Lutzomyia evansi* (Nuñez-Tovar), *Lutzomyia spinicrassa* Morales, Osorno, de Osorno & Hoyos, *Lutzomyia*

trapidoi (Fairchild & Hertig), *Lutzomyia umbratilis* Ward & Fraiha, *Lutzomyia hartmanni* (Fairchild & Hertig), *Lutzomyia flaviscutellata* (Mangabeira) and *Lutzomyia gomezi* (Nitzulescu) (Kreutzer *et al.* 1991, Ferro *et al.* 1995, Montoya-Lerma 1996).

Although *Lutzomyia* was formerly considered selvatic in behavior, domiciliary biting activity and epidemic outbreaks of leishmaniasis in rural areas have been observed since the 80's. A growing domiciliation of vectors and disease has been observed over the past few years (Bejarano *et al.* 2001 Agudelo *et al.* 2001) This phenomenon is causing a shift in the epidemiological risk of *Leishmania* infection, because the presence of sand flies inside dwellings means that not only people entering the forest the whole family including children, are at risk (Vélez *et al.* 1987, Montoya-Lerma *et al.* 1999).

This change in *Lutzomyia* behavior partly accounts for the increased incidence of leishmaniasis in Colombia, which increased from 18.3/100,000 inhabitants in 1985 to 60.9/100,000 inhabitants in 1995 (Ministerio de Salud 1996).

An inventory of phlebotomine fauna was completed during an epidemiological study undertaken to assess the risk of *Leishmania* infection among the Tikuna native community, located on the Pupuña River banks in the Putumayo Basin.

The present study was performed in the humid tropical forest zone (2° 59' 27 S, 70° 3' 49 W) of Colombian Amazonia, in the Third *Maloka*, (a kind of traditional community dwelling of some South American native tribes) of the Tikuna native community. The captures of phlebotomines were carried out with Shannon type traps that were left in the peridomicile and extradomicile and also the collection of sandflies on human bait with aspirators in the same places mentioned before, from 6 pm to 10 pm during three successive nights in the rainy season. The specimens collected were shipped in vials containing 70% alcohol, to the Laboratory of Entomology of the Program of Study and Control of Tropical Diseases (PECET - Programa de Estudio y Control de Enfermedades Tropicales) of the University of Antioquia where they were cleared in lactophenol and prepared and identified in accordance with Young and Duncan (1994).

A total of 560 individuals (131 male and 429 female sand

flies), belonging to 20 species were captured (Table 1). Most of the species collected were from the subgenus *Nyssomyia* and *Psychodopygus* that are highly antropophilic species and that could be involucrated in the transmission like *Lutzomyia davisi* (Root) that represented 30% of the whole population collected and 18.7% *Lutzomyia shawi* Fraiha, Ward & Ready specie that has been found with *Leishmania braziliensis* - like parasites (Young 1994).

Among the species captured, *L. reducta* was recorded in Colombia for the first time, thus increasing the number of species reported in this country to 130. *L. carrerai carrerai*, and *L. nocticola*, are new findings in the department of Amazonas, Colombia.

Regarding the distribution of this species, *L. reducta* has been found in Venezuela and Brazil, (Young & Duncan 1994). These two new records for the department of Amazonas, Colombia increase the number of *Lutzomyia* species to 46 and that of *Brumptomyia* to 1 (Table 2) (CIPA GROUP 1999). The species of medical relevance are *L. flaviscutellata*, vector of *Leishmania amazonensis* in Brazil and French Guyana (Young & Lawyer 1987), *Lutzomyia olmeca bicolor* Fairchild & Theodor suspected vector of *Leishmania aristidesi* in Panamá (Christensen et al. 1972) and *L. umbratilis*, vector of *Leishmania guyanensis* in Brazil (Young & Lawyer 1987). Further Desjeux (1992) reports that *Le. guyanensis* has been isolated from *L.*

Table 1. Phlebotomine species by subgenus or species group and sex captured¹ in the Tikuna native community of the Department of Amazonas, Colombia.

Subgenus or group	Species	Male	Female	Total
	<i>L. davisi</i> (Root)	23	145	168
	<i>L. hirsuta hirsuta</i> (Mangabeira)	0	2	2
	<i>L. paraensis</i> (Costa Lima)	1	8	9
Subgenus <i>Psychodopygus</i> Mangabeira	<i>L. chagasi</i> (Costa Lima)	3	47	50
	<i>L. nocticola</i> ² Young	0	1	1
	<i>L. geniculata</i> (Mangabeira)	0	26	26
	<i>L. carrerai carrera</i> ² (Barretto)	14	26	40
Subgenus <i>Viannamyia</i> Mangabeira	<i>L. furcata</i> (Mangabeira)	35	5	40
Subgenus <i>Lutzomyia</i> França	<i>L. sherlocki</i> Martins, Silva & Falcão	0	4	4
Subgenus <i>Helcocyrtomyia</i> Barretto	<i>L. tortura</i> Young & Rogers	2	2	4
	<i>L. reducta</i> ³ Feliciangeli, Ramírez-Pérez & Ramirez	0	1	1
	<i>L. umbratilis</i> Ward & Fraiha	1	5	6
Subgenus <i>Nyssomyia</i> Barretto	<i>L. yuilli yuilli</i> Young & Porter	30	36	66
	<i>L. shawi</i> Fraiha, Ward & Ready	0	105	105
	<i>L. richardwardi</i> Ready & Fraiha	6	2	8
Subgenus <i>Psathyromyia</i> Barretto	<i>L. dendrophylla</i> (Mangabeira)	6	7	13
	<i>L. shannoni</i> (Dyar)	4	2	6
Subgenus <i>Trichoporomyia</i> Barretto	<i>L. howardi</i> Young	1	0	1
Group <i>pilosa</i> Theodor	<i>L. pilosa</i> (Damasceno & Causey)	5	4	9
Group <i>verrucarum</i> Theodor	<i>Lutzomyia nevesi</i> (Damasceno & Arouck)	0	1	1
Total		131	429	560

¹All captures were made with Shannon traps and on human bait around the traps.

²New records from the department of Amazonas, Colombia

³New record from Colombia

Table 2. Other Phlebotomine species, by subgenus or species group recorded in the department of Amazon, Colombia in Accordance with CIPA Group 1999.

Género <i>Brumptomyia</i> Franca & Parrot
<i>Brumptomyia pentacantha</i> (Barretto)
Género <i>Lutzomyia</i> França
Subgénero <i>Lutzomyia</i>
<i>L. evangelistai</i> Martins & Fraiha
<i>L. araracuarensis</i> Morales & Minter
<i>L. falcata</i> Young, Morales & Ferro
<i>L. gomezi</i> (Nitzulescu)
<i>L. marinkellei</i> Young
Subgénero <i>Sciopemyia</i> Barretto
<i>L. preclara</i> Young & Arias
<i>L. sordellii</i> (Shannon & Del Ponte)
Subgénero <i>Evandromyia</i> Mangabeira
<i>L. monstrosa</i> (Floch & Abonnenc)
<i>L. infraspina</i> (Mangabeira)
Subgénero <i>Micropygomyia</i> Barretto
<i>L. micropyga</i> (Mangabeira)
Subgénero <i>Nyssomyia</i> Barretto
<i>L. antunesi</i> (Coutinho)
<i>L. flaviscutellata</i> (Mangabeira)
<i>L. olmeca bicolor</i> Fairchild & Theodor
Subgénero <i>Pintomyia</i> Costa Lima
<i>L. christenseni</i> (Floch & Abonnenc)
Subgénero <i>Psathyromyia</i> Barretto
<i>L. lutziana</i> (Costa Lima)
<i>L. cuzquena</i> Martins, Llanos & Silva
<i>L. scaffii</i> (Damasceno & Arouck)
Subgénero <i>Psychodopygus</i> Mangabeira
<i>L. amazonensis</i> (Root)
<i>L. ayrozai</i> (Barretto & Coutinho)
<i>L. bispinosa</i> (Fairchild & Hertig)
Subgénero <i>Trichophoromyia</i> Barretto
<i>L. saltuosa</i> Young
Subgénero <i>Sciopemyia</i> Barretto
<i>L. preclara</i> Young & Arias
<i>L. sordelli</i> (Shannon & del Ponte)
Subgénero <i>Trichopygomyia</i> Barretto
<i>L. witoto</i> Young & Morales
Group <i>Aragaoi</i> Theodor
<i>L. aragoi</i> (Costa Lima)
<i>L. runoides</i> (Fairchild & Hertig)
Group <i>Dreisbachi</i> Lewis <i>et al.</i>
<i>L. dreisbachi</i> (Causey & Damasceno)
Group <i>Migonei</i> Theodor
<i>L. walkeri</i> (Newstead)
Group <i>Saulensis</i> Lewis <i>et al.</i>
<i>L. saulensis</i> (Floch & Abonnenc)

umbratilis in the Amazonian region of Colombia. *Lutzomyia shannoni* has been found naturally infected with unidentified flagellates (Young & Duncan 1994) and is also a confirmed vector of vesicular stomatitis (Comer *et al.* 1990).

Furthermore, the presence of *Lutzomyia geniculata* Mangabeira was noted. This species belong to the subgenus *Psychodopygus* and has been reported by Feliciangeli *et al.*

(1988) in the Venezuelan Amazon. Since few variations in the spermathecae has been found, Feliciangeli suggests that this species could belong to the geniculata complex, however male specimens that could be appropriately identified have not been captured until now (Feliciangeli *et al.* 1988).

Nyssomyia and *Psychodopygus* subgenus have a wide range of species distributed in Southamerica and some of them have been incriminated in the transmission of Leishmaniasis (Desjeux 1991). Our study show that *L. davisii* and *L. shawi* presented a high density in comparison with other species found and also they had an antropophilic behaviour; in the case of *L. davisii* 145 females were collected from 168 specimens and in *L. shawi* only 105 females were found. Even though they have not been incriminated as vectors, we think that high densities, wide range of distributions and antropophilic behaviour are some of the risk factors that could incriminate species in a transmission zone.

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