

The known geographical distribution of sand flies in the State of Acre, Brasil (Diptera: Psychodidae) (1)

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Abstract

We report sand fly collections in the proximity of two major cities in the state of Acre, Brazil, and cite 19 species as new state records. These, along with other previously recorded phlebotomines from Acre, bring the total species count to 50.

INTRODUCTION

Not since Martins & Silva (1964) first cited phlebotomine sand fly collections from the state of Acre, has any directed collecting programme been made to further register the existing species from there. Martins *et al.* (1978) cite one other sand fly species from this state.

Here we present the results of a collection of 6726 specimens in three genera and 37 species from the two principal cities of the state of Acre, Rio Branco and Cruzeiro do Sul (Table 1). Collections were restricted to these two localities due to the poor accessibility to the other areas of the state. CDC miniature light traps, human bait and tree base collections were the sampling methods utilized during the month of May, 1981.

RESULTS

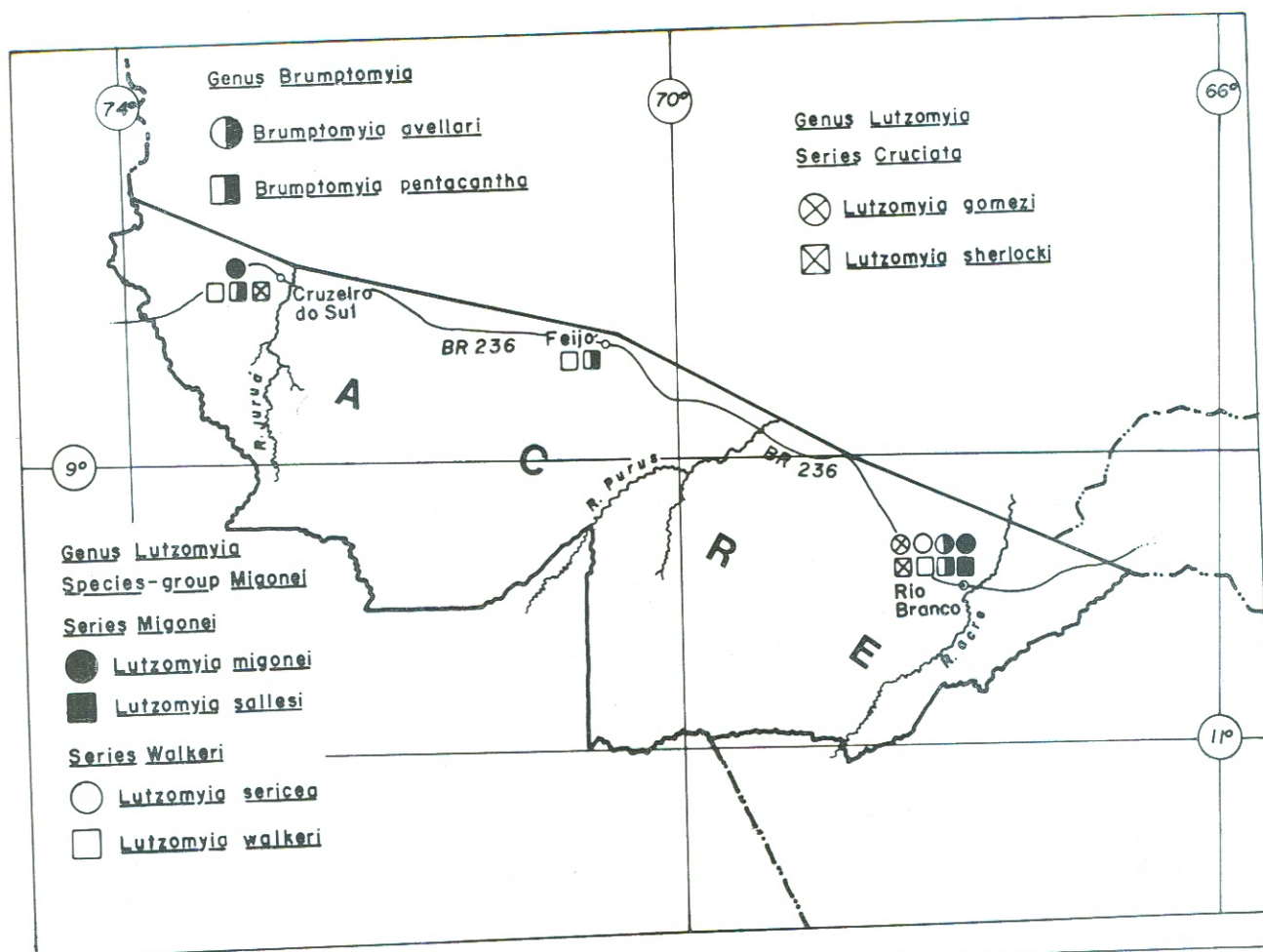
Genus *Brumptomyia*

In the state of Acre, genus *Brumptomyia* was represented by two species. The first, *B. pentacantha*, which has been collected in the Rio Branco, Feijó and Cruzeiro do Sul areas, was taken quite frequently, and was quite common in CDC light traps in the tree canopies between 6 and 8 meters from the forest floor (particularly from the Cruzeiro do Sul collecting site). The second species in this group was

TABLE 1 — Sand flies captured in the State of Acre, Brazil.

Species	♂ ♂	♀ ♀	Total
<i>Brumptomyia pentacantha</i>	46	27	73
<i>Luizomyia abonnenci</i>	7		7
<i>L. anduzei</i>		4	4
<i>L. antunesi</i>	119	107	226
<i>L. aragaoi</i>	2	1	3
<i>L. au.aensis</i>	2256	1136	3392
<i>L. caicarata</i>	7	6	13
<i>L. campbelli</i>	1		1
<i>L. choti</i>	19	23	42
<i>L. dendrophyla</i>	34		34
<i>L. flabellata</i>	2		2
<i>L. flaviscutellata</i>	4	10	14
<i>L. "fluvialis like"</i>		1	1
<i>L. furcata</i>	2	2	4
<i>L. gomezi</i>		1	1
<i>L. lutziana</i>	1		1
<i>L. micropyga</i>	1		1
<i>L. monstrosa</i>		1	1
<i>L. nevesi</i>	81	111	192
<i>L. "nordestina like"</i>		1	1
<i>L. olmeca bicolor</i>		3	3
<i>L. richardwardi</i>		3	3
<i>L. runoides</i>		1	1
<i>L. saulensis</i>	5	11	16
<i>L. scaffi</i>	2		2
<i>L. sericea</i>	1		1
<i>L. serrana</i>	33	7	40
<i>L. shannoni</i>	22		22
<i>L. sherlocki</i>	12		12
<i>L. trinidadensis</i>	1		1
<i>L. umbratilis</i>	9	4	13
<i>L. whitmani</i>	850	356	1206
<i>Psychodopygus amazonensis</i>		9	9
<i>P. carrerai</i>	89	221	310
<i>P. davisi</i>	129	221	350
<i>P. guyanensis</i>	4	5	9
<i>P. hirsutus</i>	280	387	667
<i>P. sp. n.° 1</i>	7	41	48
TOTAL	4026	2700	6726

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Map 1 — Distribution of sand flies in the genus *Brumptomyia*; genus *Lutzomyia*, subgenus *Lutzomyia*, series *cruciata* and species-group *migonei*, from the state of Acre.

B. avellari, as recorded by Martins & Silva (1964), from the Rio Branco area. *B. pentacantha* is a species known from Ecuador, Peru, Bolivia and western Amazonian Brazil. *B. avellari* has been recorded from Panama to southern Brazil.

Genus *Lutzomyia*

In the genus *Lutzomyia*, subgenus *Lutzomyia*, series *cruciata*, we recorded *L. gomezi* and *L. sherlocki* in the state of Acre for the first time. We collected both species in the Rio Branco area, but only took *L. sherlocki* from Cruzeiro do Sul. *L. gomezi* is widely distributed from El Salvador (Central America), to throughout Amazonian Brazil. *L. sherlocki*, on the other hand, is only known from Mato Grosso State

(Brazil) and Peru; both of these species are state records.

The *migonei* species-group is represented by four species in the state of Acre. Two of these species, *L. migonei* and *L. sallesi*, are in the series *migonei*, and the other two, *L. sericea* and *L. walkeri*, are in the series *walker*i. All four of these species have been recorded from the Rio Branco area, while only *L. migonei* and *L. walkeri* are known from the Cruzeiro do Sul area. *L. migonei* has a distribution from Colombia, Brazil, Paraguay and Argentina; *L. sallesi* is recorded from Brazil and Bolivia; *L. sericea* from French Guyana and the northern Amazon of Brazil; and *L. walkeri* from Peru, Brazil, Bolivia and Paraguay.

The species-group *gasparviannai* is represented in the state of Acre only by *L. flabellata*

which is only recorded from the Rio Branco area, the type locality. This species only has a western Brazilian Amazonian distribution.

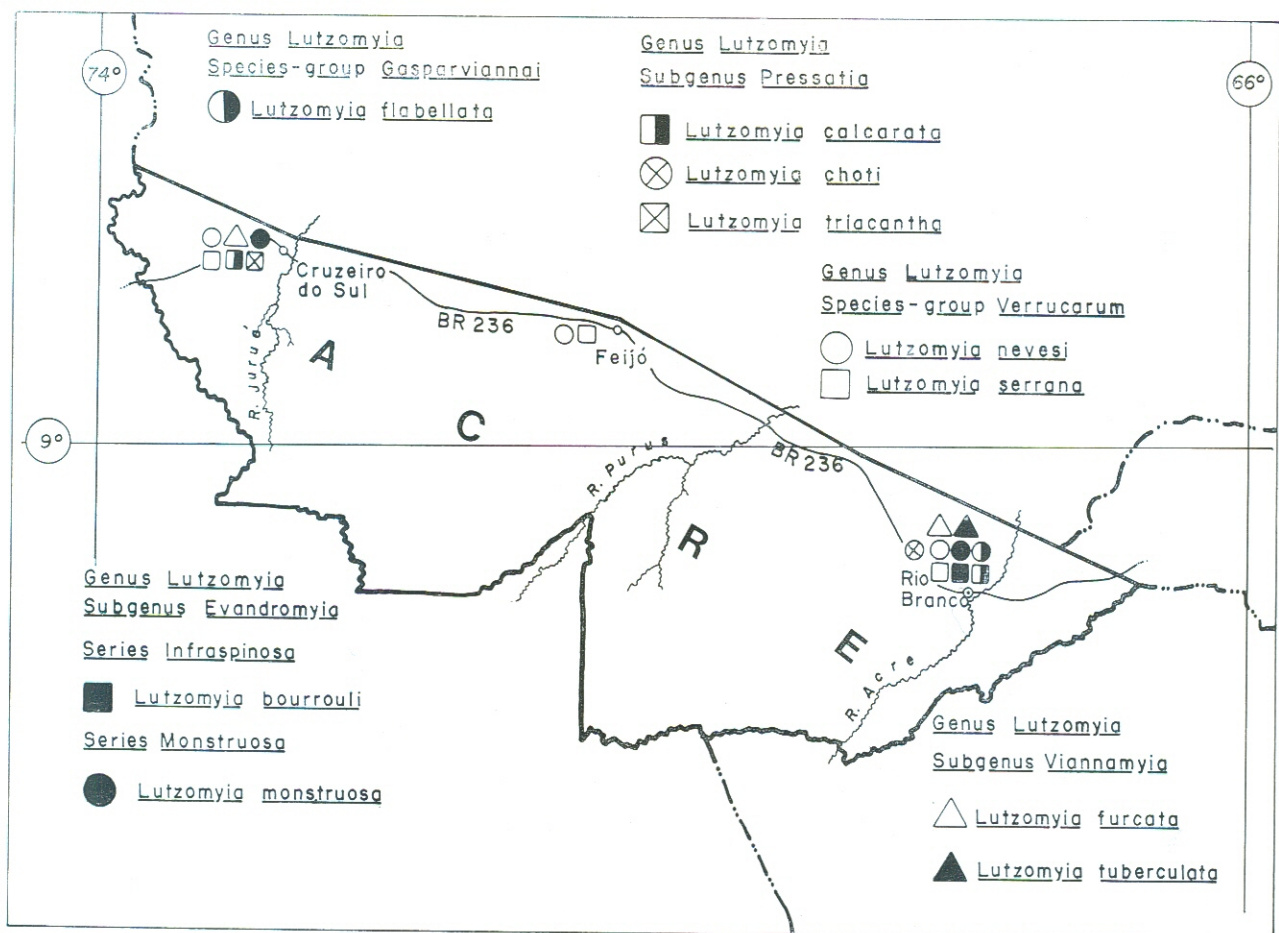
Both *L. nevesi* and *L. serrana* in the species-group *verrucarum* have been recorded from the Rio Branco, Feijó and Cruzeiro do Sul areas. These species were taken most often resting on tree bases. *L. serrana* is a species that is known from Mexico to southern Brazil and Bolivia and *L. nevesi* has been recorded from Peru, Bolivia and Western Brazil.

The subgenus *Pressatia* is represented by three species; *L. calcarata* from the Rio Branco and Cruzeiro do Sul areas, *L. triacantha* from the Cruzeiro do Sul area and *L. choti* from the Rio Branco area. *L. calcarata* is known from the western Amazon Basin; *L. triacantha* from Colombia, Peru and the northern half of the

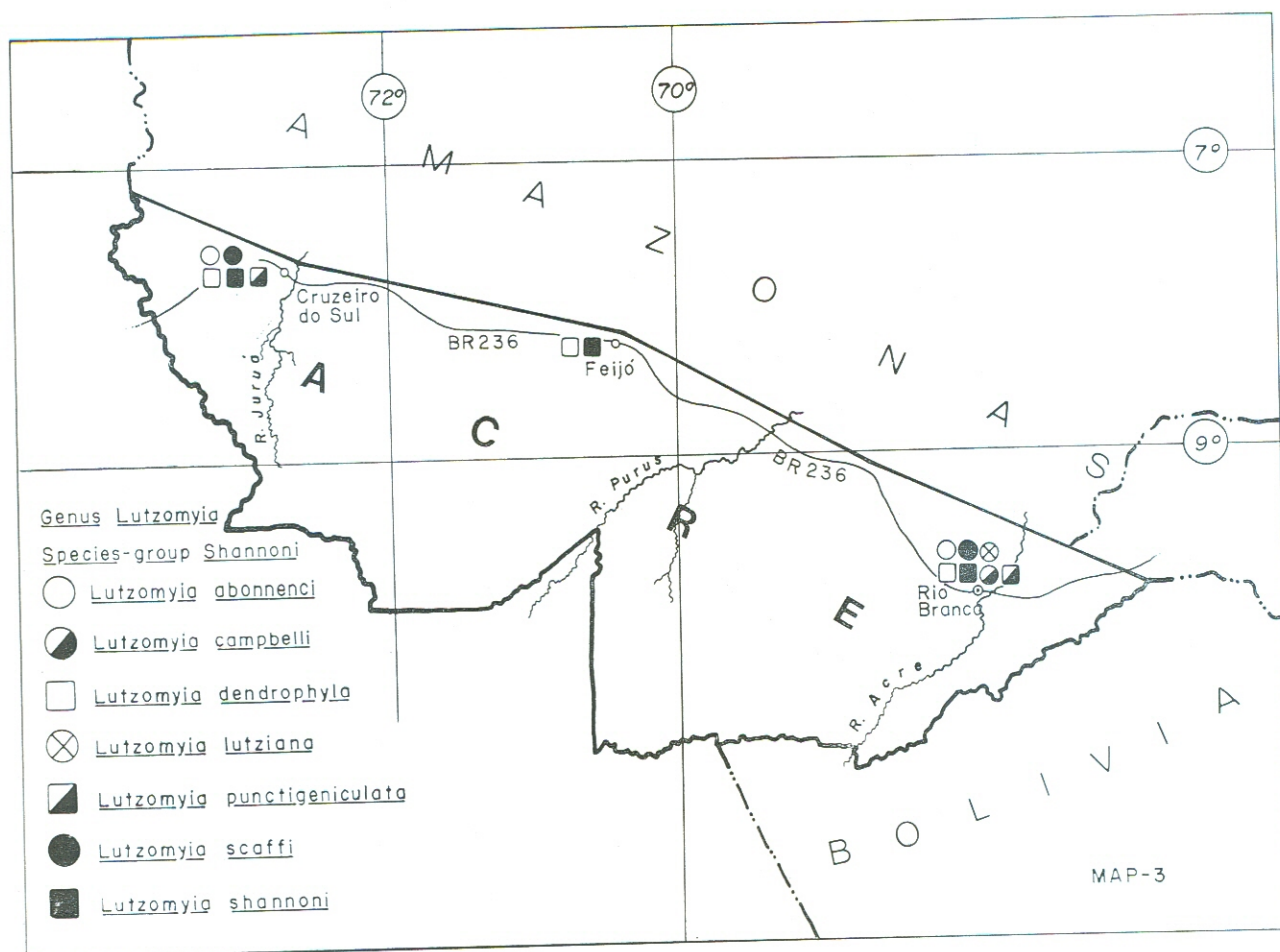
Amazon Basin of Brazil; and *L. choti* from French Guyana, Amazonian Brazil and Peru.

In the subgenus *Evandromyia* we only recorded two species. *L. monstruosa* in the series of the same name has been taken from the Rio Branco and Cruzeiro do Sul areas while *L. bourrouli* in the series *infraspinosa* has only been recorded from the Rio Branco area. *L. bourrouli* can be found from the Amazon Basin to São Paulo in Brazil, and *L. monstruosa* is known from French Guyana and Brazilian Amazon.

In the subgenus *Viannamyia*, *L. furcata* has been collected in the Rio Branco and Cruzeiro do Sul areas while *L. tuberculata* has only been taken in the Rio Branco area. Both of these species are known from Central America to the Brazilian Amazon.



Map 2 — Distribution of sand flies in the genus *Lutzomyia*, species-group *gasparviannai*; species-group *verrucarum*; subgenus *Pressatia*; genus *Lutzomyia*, subgenus *Evandromyia*; and subgenus *Viannamyia*, from state of Acre.



Map 3 — Distribution of sand flies in the genus *Lutzomyia*, species-group *shannoni*, from the state of Acre.

TABLE 2 — Sand fly species found in the State of Acre, Brazil.

BRUMPTOMYIA França & Parrot (1921)
Brumptomyia avellari (Costa Lima) (1932)
Brumptomyia pentacantha (Barretto) (1947)

LUTZOMYIA França (1924)
Lutzomyia abonnenci (Floch & Chassignet) (1947)
*Lutzomyia anduzei** (Rozeboon) (1942)
Lutzomyia antunesi (Coutinho) (1939)
Lutzomyia aragaoi (Costa Lima) (1932)
Lutzomyia auranesis (Mangabeira) (1942).
Lutzomyia bourroli (Barretto & Coutinho) (1941)
Lutzomyia calcarata Martins & Silva (1964)
Lutzomyia campbelli (Damasceno, Causey & Arouck) (1945)
*Lutzomyia choti** (Floch & Abonnenc) (1941)
Lutzomyia dendrophyla (Mangabeira) (1942)
Lutzomyia flabellata Martins & Silva (1964)
*Lutzomyia flaviscutellata** (Mangabeira) (1942)
Lutzomyia flochi (Abonnenc & Chassignet) (1948)
*Lutzomyia "fluviatilis-like"**
Lutzomyia furcata (Mangabeira) (1941)
*Lutzomyia gomezi** (Nitzulsecu) (1930)

Lutzomyia longipennis (Barretto) (1946)
*Lutzomyia lutziana** (Costa Lima) (1932)
Lutzomyia micropyga (Mangabeira) (1942)
Lutzomyia migonei (França) (1920)
*Lutzomyia monstruosa** (Floch & Abonnenc) (1944)
Lutzomyia nevesi (Damasceno & Arouck) (1956)
Lutzomyia nordestina (Mangabeira) (1942)
Lutzomyia "nordestina-like"
*Lutzomyia olmeca bicolor** Fairchild & Theodor (1971)
Lutzomyia punctigeniculata (Floch & Abonnenc) (1944)
*Lutzomyia richardwardi** Ready & Fraiha (1981)
Lutzomyia runoides (Fairchild & Hertig) (1953)
Lutzomyia sallesi (Galvão & Coutinho) (1940)
Lutzomyia saulensis (Floch & Abonnenc) (1944)
*Lutzomyia scaffi** (Damasceno & Arouck) (1956)
Lutzomyia sericea (Floch & Abonnenc) (1944)
Lutzomyia serrana (Damasceno & Arouck) (1949)
Lutzomyia shannoni (Dyar) (1929)
*Lutzomyia sherlocki** Martins, Silva & Falcão (1971)
Lutzomyia sylvicola (Floch & Abonnenc) (1945)
Lutzomyia triacantha (Mangabeira) (1942)
Lutzomyia trinidadensis (Newstead) (1922)

TABLE 2 — (Continuation).

Lutzomyia tuberculata (Mangabeira) (1941)
*Lutzomyia umbratilis** Ward & Fraiha (1977)
Lutzomyia walkeri (Newstead) (1914)
*Lutzomyia whitmani** (Antunes & Coutinho) (1939)

PSYCHODOPYGUS Mangabeira (1941)

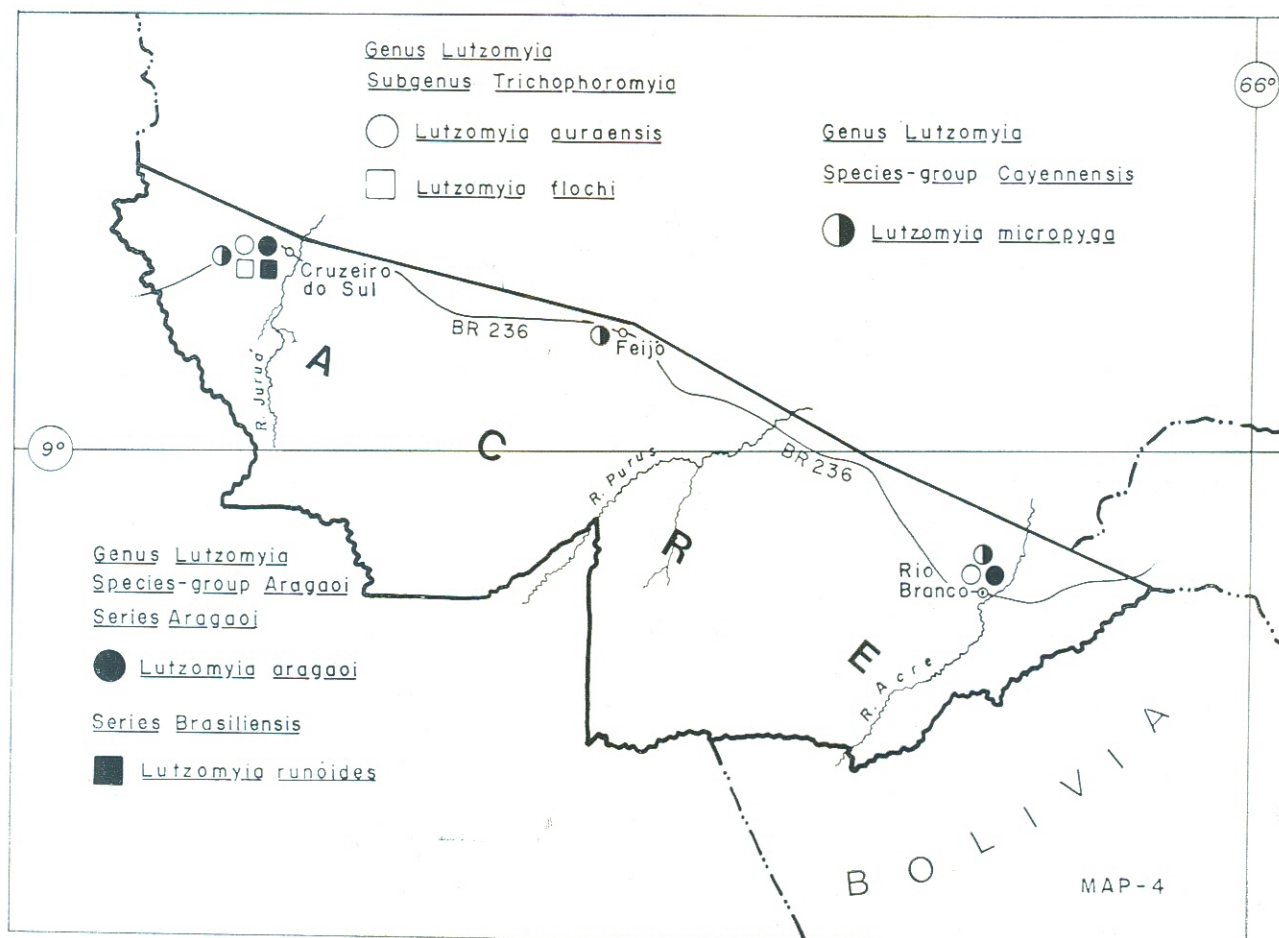
*Psychodopygus amazonensis** (Root) (1934)
*Psychodopygus carrerai** (Barretto) (1946)
*Psychodopygus davisii** Root) (1934)
*Psychodopygus guyanensis** (Floch & Abonnenc) (1941)
Psychodopygus hirsutus (Mangabeira) (1942)
Psychodopygus sp. 1*

(*) — Indicate new state records for Acre.

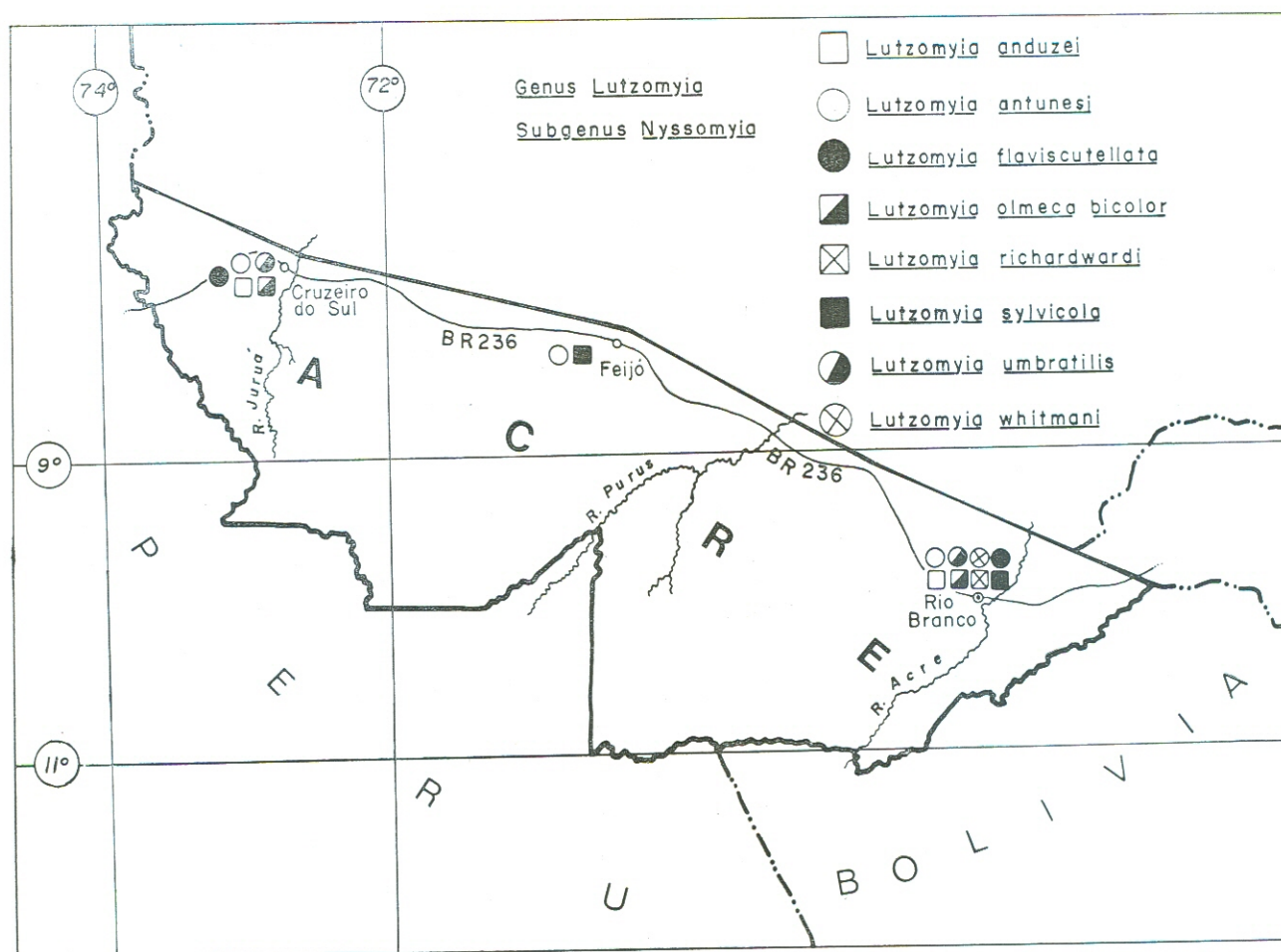
In the *shannoni* species-group we now find seven species in Acre. Martins & Silva (1964) had registered five of these species for Acre, and we record *L. scaffi* and *L. lutziana* as new state records. Both *L. dendrophyla* and *L. shannoni* are recorded from the Rio Branco,

Feijó and Cruzeiro do Sul areas. *L. abbonenci*, *L. scaffi* and *L. punctigeniculata* have been taken in the Rio Branco and Cruzeiro do Sul area. *L. campbelli* and *L. lutziana* were only taken from the Rio Branco area. *L. abbonenci* is known from Panama to northeastern Brazil and French Guyana. *L. campbelli*, *L. dendrophyla* and *L. punctigeniculata* are known from the Brazilian Amazon and some neighboring countries. *L. shannoni* is probably the Neotropical sand fly with the greatest known geographical distribution, ranging from southern USA to northern Argentina.

In the *aragaoi* species group we found *L. aragaoi* in the series of the same name. Martins *et al.* (1978) cite *L. runoides* in the series *brasiliensis*. Both of these species have been taken in the Cruzeiro do Sul area, while only the former has been taken in the Rio Branco area. Both of these species are widely dis-



Map 4 — Distribution of sand flies in the genus *Lutzomyia*, species-group *aragaoi*; subgenus *Trichophoromyia*; and species-group *cayennensis*, from the state of Acre.



Map 5 — Distribution of sand flies in the genus *Lutzomyia*, subgenus *Nyssomyia*, from the state of Acre.

tributed, ranging from Central America to Brazil.

In the subgenus *Trichophoromyia* there are only two species recorded from Acre, both reported by Martins & Silva (1964). *L. auraensis* has been taken both from the Rio Branco and Cruzeiro do Sul areas, while *L. flochi* was only recorded from the Cruzeiro do Sul area. Both of these species are known from the Brazilian Amazon and some neighboring countries. *L. auraensis* was the sand fly species that we most frequently caught, accounting for 50% of all the specimens taken.

The species-group *cayennensis* is represented in the state of Acre by only one species, *L. micropyga*, which has been recorded from the Rio Branco, Feijó and Cruzeiro do Sul areas. This species is known from Panama through the Brazilian Amazon to Bolivia.

In the subgenus *Nyssomyia* are recorded eight species for Acre. Martins & Silva (1964) had only recorded two of these: *L. antunesi* from the Rio Branco, Feijó and Cruzeiro do Sul areas, and *L. sylvicola* from the Rio Branco and Feijó areas. The other six species are new state records for Acre: *L. anduzei*, *L. flaviscutellata*, *L. olmeca bicolor* and *L. umbratilis* were taken both at the Rio Branco and Cruzeiro do Sul areas, while *L. richardwardi* and *L. whitmani* were only taken in the Rio Branco area. We did not take *L. sylvicola* in any of our collections. These species are generally Amazonian in distribution and some have been recorded in neighboring countries. Only *L. antunesi* and *L. whitmani* were caught frequently, the other species only being taken occasionally.

In the species-group *oswaldoi* we find two species in Acre; *L. longipennis* and *L. trinidadensis*.

densis. Both species have been taken in the Rio Branco area while the latter has also been taken in the Feijó area. *L. longipennis* is restricted to northern Brazil in distribution, while *L. trinidadensis* can be found from Mexico to northern Brazil and Bolivia.

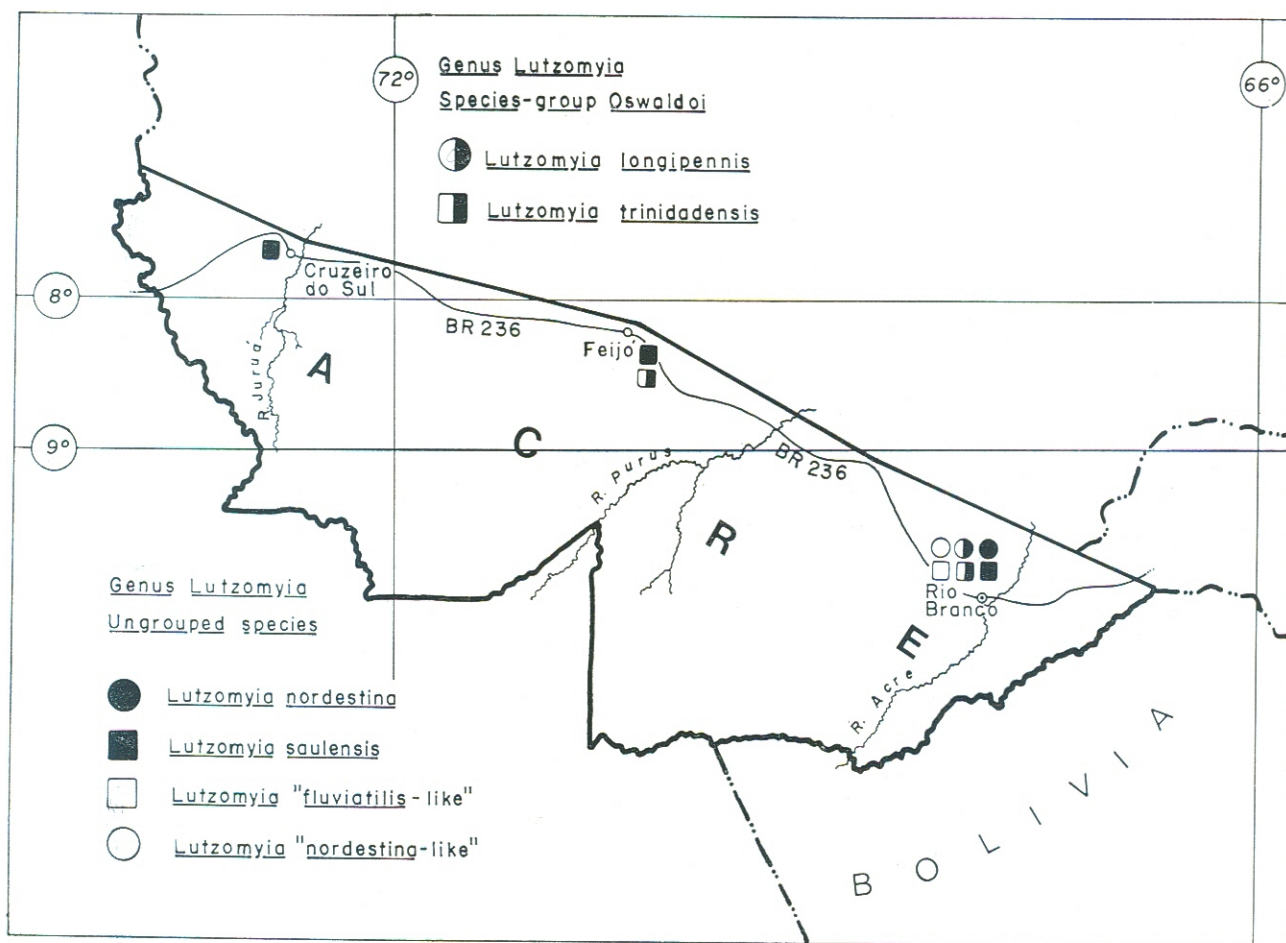
Certain sand flies which have not been placed in any defined group are treated here together. Four of these species were taken from the state of Acre. *L. saulensis* was taken in the Rio Branco, Feijó and Cruzeiro do Sul areas. *L. nordestina* and a species which approximates it (which we have denominated *L. "nordestina-like"* and which will be treated separately), along with a *L. "fluviatilis-like"* species were taken from the Rio Branco area. *L. nordestina* and *L. saulensis* are known from Central America to Brazil. The other two species have been taken in Rondônia and Amazonas States, Brazil.

Genus *Psychodopygus*

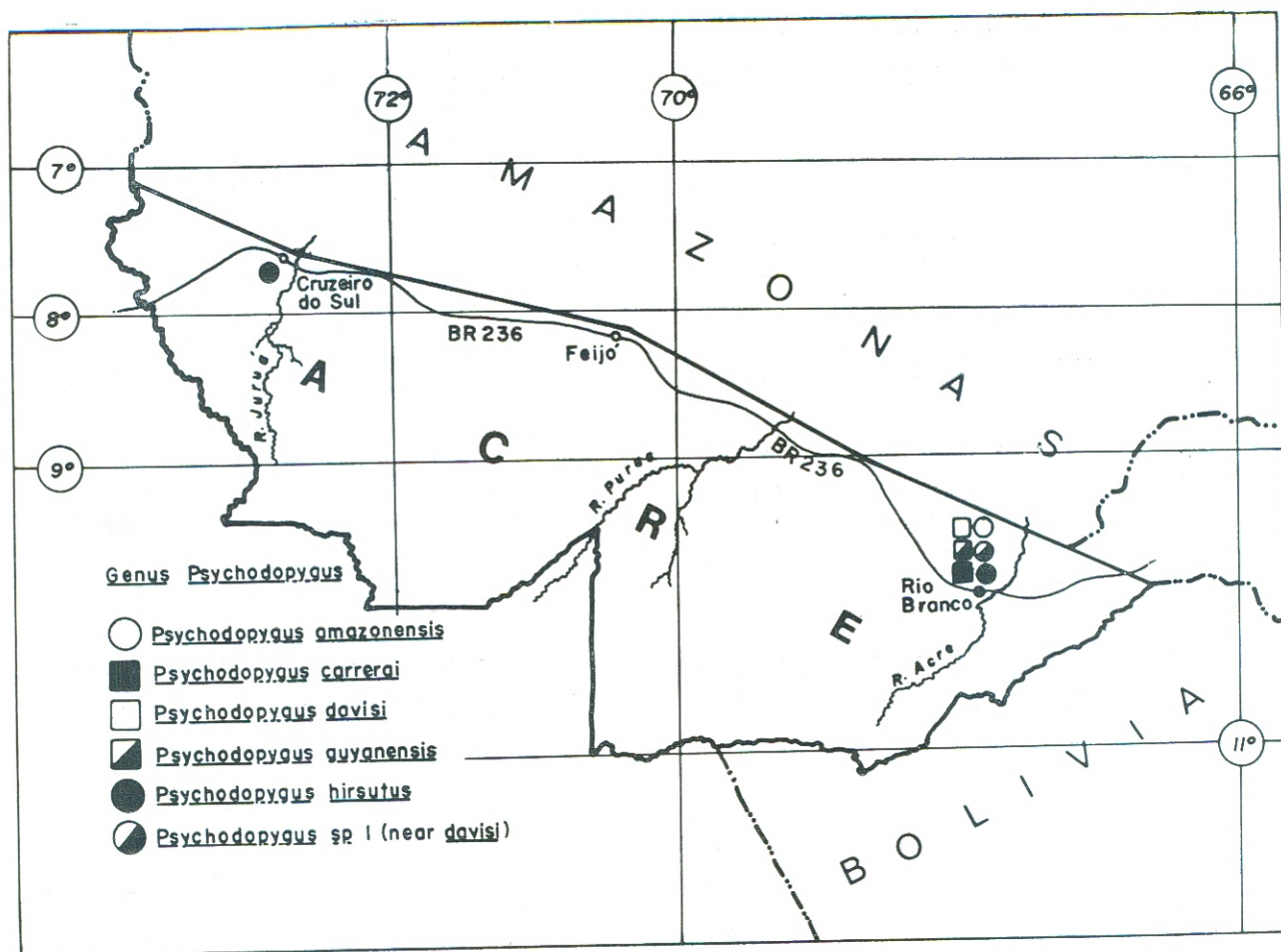
Only six species in the genus *Psychodopygus* were taken in Acre. *P. hirsutus* was taken both from the Rio Branco and Cruzeiro do Sul areas. The other five species, *P. amazonensis*, *P. carrerai*, *P. davisii*, *P. guyanensis* and *P. sp. 1.* (near *davisii*) were taken in the Rio Branco area. All of these species have an Amazonian distribution from French Guiana to Peru and some of the neighboring countries. *P. davisii* and *P. guyanensis* can also be found in southern Brazil.

DISCUSSION

Martins & Silva (1964) cited 30 species of phlebotomine sand flies from the state of Acre. Of these, we did not take 13 species, yet we did record 19 species as new state records which were not cited by these authors.



Map 6 — Distribution of sand flies in the genus *Lutzomyia*, species-group *oswaldoi*; and of ungrouped sand flies in the genus *Lutzomyia* from the state of Acre.



Map 7 — Distribution of sand flies in the genus *Psychodopygus*, from the state of Acre.

Even though our collections were intensive, yet over a short period of time, the sand fly fauna here appears to be poorer than that of the neighboring state of Rondônia as recently reported by Biancardi *et al.*, 1982.

Table 2 presents a complete list of all the sand flies recorded by Martins & Silva (1964) and those collected here, as well as indicating all new state records.

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SUMÁRIO

Apresentamos os resultados de coletas de flebotomos nas proximidades de duas das principais cidades

do Estado do Acre. Além das espécies citadas por Martins & Silva (1964) e Martins *et al.* (1978), coletamos 19 espécies adicionais. No presente citamos todas 50 espécies de flebotomos encontrados no Estado.

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Arias & Freitas