

BOLIVIAN PHLEBOTOMINES. II. *PSYCHODOPYGUS YUCUMENSIS* N.SP.,
A NEW MAN-BITING PHLEBOTOMINE SANDFLY FROM
SUBANDEAN REGION (DIPTERA, PSYCHODIDAE)

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Psychodopygus yucumensis n.sp., a new species of Phlebotomine sandfly belonging in genus *Psychodopygus* Mang., is described from specimens collected from human bait, in Beni dept., Bolivia. The male is characteristic of the series *panamensis*, but the female, closely related to *P. carrerai carrerai*, can be confused with this species ("cryptic species"). Isozyme characterization can determine any specimen of either species, while morphometric analysis shows statistical differences between the two species.

P. yucumensis is strongly anthropophilic. A *Leishmania braziliensis braziliensis* stock was isolated from this new species, indicating that it is one of the vectors of mucocutaneous *Leishmaniasis* in the lowland subandean area.

Key-words: *Psychodopygus carrerai* – cryptic species – morphological description – leishmaniasis

Members of the genus *Psychodopygus* Mangabeira 1941 constitute the dominant group of anthropophilic Phlebotomine sandflies in primary forest of the lowland subandean region of Bolivia (elevation 200-1000m) (Le Pont, unpublished data). This group has a well-known distinctive epidemiological significance (Ready et al., 1980); indeed several species have been considered as vectors or probable vectors of mucocutaneous *Leishmaniasis* caused by *Leishmania braziliensis* s.l. (Lainson et al., 1973). Between some related taxa of *Psychodopygus* the females are sometimes indistinguishable by means of classical morphological characters ("cryptic species") (Ready et al., 1982; WHO report, 1984) and it is therefore necessary to look for minor morphological or colorimetric differences in order to distinguish them accurately. A powerful tool for this diagnostic of cryptic species (if they live in sympatric conditions) is provided by isozyme analysis. Captures on human bait in the Alto Beni region allowed the capture in sympatric conditions of two sets of specimens seeming to belong to the taxon *P. carrerai carrerai*: some specimens exhibited typical features of this species while others showed a light brown mesonotum.

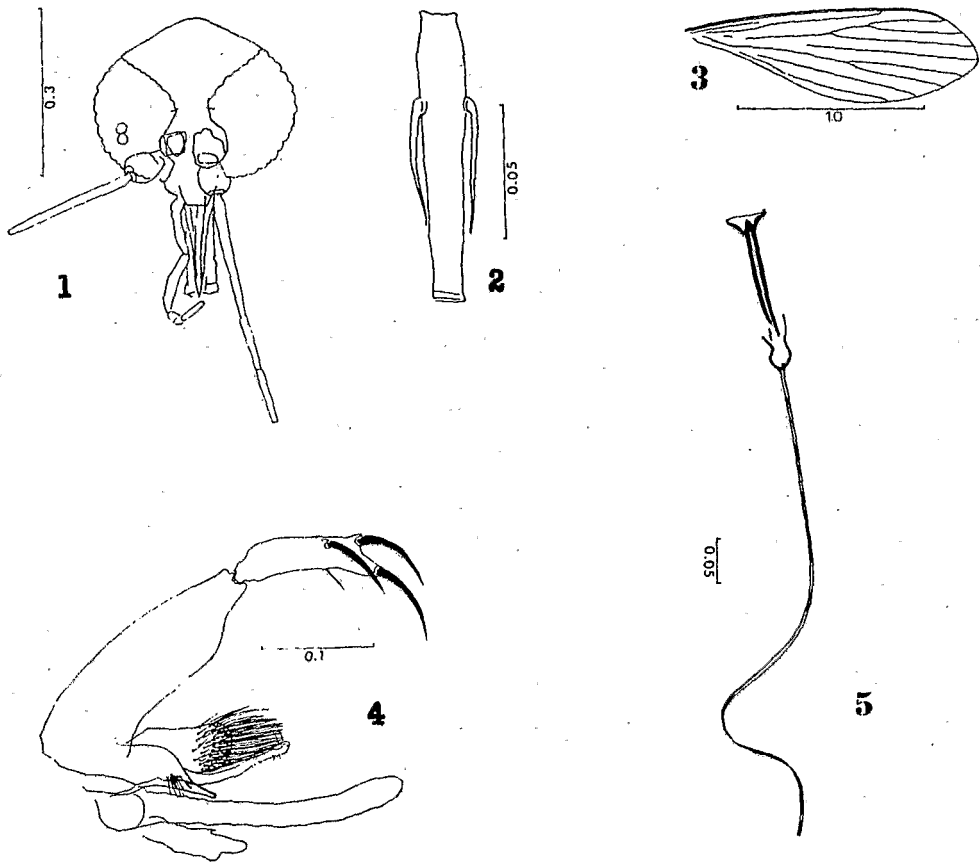
Electrophoretic analysis of these two sets of specimens showed that they are genetically isolated (Le Pont et al., 1985) and hence that they are distinct species, one being the formerly described *P.c. carrerai*, the other being a new species.

We present here a morphological description of this new species as well as a morphometrical comparison between the two cryptic species.

All measurements in the text are in millimeters; all specimens are mounted on microslides in Euparal medium.

Psychodopygus yucumensis Le Pont, Caillard, Tibayrenc & Desjeux n.sp.

Holotype ♂: a small pale sandfly approximately 2.40 long from tip of labrum to end of coxite



Psychodopygus yucumensis n.sp. male. Fig. 1: head. Fig. 2: flagellomere II (A4). Fig. 3: wing. Fig. 4: genitalia. Fig. 5: genital filaments and pump.

segments: 1-0.025; 2-0.071; 3-0.120; 4-0.029; 5-0.049; *palpal formula*: 1-4-5-2-3; *cibarium* with about 15-20 scattered dotlike vertical teeth; *chitinous arch* visible only at sides; no *pigment patch*; *pharynx* 0.17 long, unarmed.

median longitudinal irregular rows of 4-7 large erected teeth in each row, diverging anteriorly and a file of dense small vertical pointed teeth restricted to the anterior side of the bar from which horizontal teeth arise; *pigmented area* little perceptible except for wrinkles; high *chitinous arch*, barely visible; *pharynx* (0.19 long) unarmed.

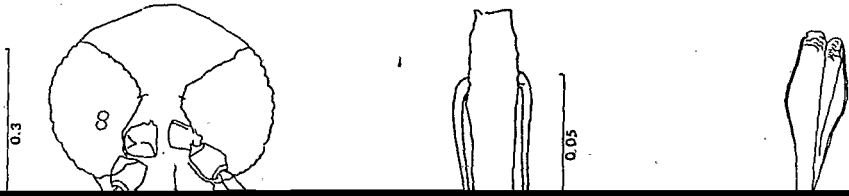




TABLE II

A comparison of some features of *P. yucumensis** n.sp. and *P. c. carrerai** based on females flies collected in the focus of Yucumo, Bolivia

	<i>P. c. carrerai</i>		<i>P. yucumensis</i> n. sp.	
Body length (Thorax + Abdomen)	1,91	-2,32 (2,12)	2,14	-2,32 (2,24)
Head length (includ. clypeus)	0,381	-0,43 (0,411)	0,39	-0,425 (0,411)
Head width	0,389	-0,440 (0,413)	0,34	-0,450 (0,415)
Labrum length	**0,241	-0,278 (0,257)	0,252	-0,29 (0,271)
A 3 length	0,202	-0,250 (0,227)	0,216	-0,25 (0,232)
A 4 + A 5 length	0,195	-0,233 (0,211)	0,190	-0,220 (0,204)
Palpal seg. 1, length	0,027	-0,041 (0,035)	0,030	-0,041 (0,034)
2	0,103	-0,122 (0,110)	0,103	-0,129 (0,119)
3	0,129	-0,158 (0,145)	0,143	-0,162 (0,152)
4	0,037	-0,055 (0,048)	0,041	-0,057 (0,051)
5	0,061	-0,079 (0,067)	0,062	-0,080 (0,069)
Palpal length	0,371	-0,442 (0,406)	0,408	-0,459 (0,428)
Palpal formula	1 - 4 - 5 - 2 - 3		1 - 4 - 5 - 2 - 3	
Nº of upper mesepisternal setae	12		15	
Nº of lower mesepisternal setae	10		9	
Wing length	1,78	-2,27 (2,06)	2,07	-2,4 (2,20)
Wing width	0,54	-0,68 (0,62)	0,63	-0,71 (0,65)
Alpha	0,47	-0,64 (0,56)	0,58	-0,67 (0,61)
Beta	0,19	-0,28 (0,23)	0,22	-0,29 (0,26)
Gamma	0,14	-0,21 (0,18)	0,10	-0,19 (0,14)
Delta	0,12	-0,23 (0,17)	0,12	-0,2 (0,16)
Spermathecae annuli	10		10	
Spermatheca length	0,035	-0,060 (0,051)	0,050	-0,068 (0,055)
Individual duct length	0,025	-0,033 (0,027)	0,015	-0,037 (0,030)
Common duct length	0,178	-0,27 (0,222)	0,153	-0,225 (0,190)
Base of the rugose section of the common sperm duct	*** "Y" shaped		"V" shaped	

* The means and ranges in size of the body parts of sandflies from Yucumo are based on 10 specimens of *P. yucumensis* n. sp. and 10 specimens of *P. c. carrerai*, except for labrum, antennal flagellomere I and wing length (20 specimens).

** 0,24-0,27 (0,25) n = 20 for Colombian specimens of *P. c. carrerai* (Young 1979).

*** "V" shaped for Colombian specimens of *P. c. carrerai* (Young, 1979).

several mistaken identifications as non-dimensional species (Martins et al., 1973). Young (1979) considers *P. pessoana* as a junior synonym of *P. c. carrerai*, the status of *P. fairchildi* needs to be clarified.

We performed a statistical comparison of some morphometric data between *P. c. carrerai* and *P. yucumensis* by means of Student's t test. It showed statistically significant differences for the following characters. Male: A3 length, wing length, genital pump; female: body length, labrum length, palp 2 and 3 length, total palp length, wing length, wing breadth, alpha, beta and gamma length. These results, recorded between two sympatric populations, are consistent with the hypothesis of speciation that was previously inferred on the basis of an isozymic study (Le Pont et al., 1985).

P. yucumensis was first caught on human bait in a primary forest area laying at the foot (elevation 250m) of the last subandean cordillera close to the village of Yucumo (annual precipitations = 1750mm) and appears to be the second most abounding anthropophilic species with *P. llanosmartinsi* behind *P. c. carrerai*; *P. yucumensis* is used to bite at ground level as do most of the *Psychodopygus* species. It was also caught very often in various stations of the rivers Quiquibey, Tuichi and Hondo, which are tributaries of the river Beni flowing in the broad valley between the two last cordilleras of the andean foothills. *P. yucumensis* seems to be linked to the lowland subandean region (elevation 200-400m), unlike *P. c. carrerai*, which seems to be able to adapt to slightly higher altitudes (200-1000m).

We have recently isolated from a *P. yucumensis* specimen caught on human bait in this area a *Leishmania* stock which was referred to *Leishmania braziliensis braziliensis* by isozyme analysis (Le Pont & Desjeux, unpublished data). It seems therefore worth continuing the ecological study of *P. yucumensis* and particularly its trophic preferences, which might clarify the "unsolved problem" (Lainson, 1983) of the *L. b. braziliensis* reservoirs.

TABLE III

Mean values of some measurements for *P. c. carrerai* (= MA) and *P. yucumensis* (= MB), and results of comparison by means of Student's *t* test

	MA	MB	df	t	p
<i>Male characters:</i>					
Genital filaments	0.590 (0.008)	0.586 (0.004)	29	0.48	NS
Labrum length	0.168 (0.002)	0.170 (0.002)	29	0.71	NS

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