Habitat and seasonality of *Psychodopygus wellcomei* help incriminate it as a vector of *Leishmania braziliensis* in Amazônia and Northeast Brazil

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The series *Psychodopygus squamiventris* (Diptera: Psychodidae, Phlebotominae) contains a number of morphospecies whose males are morphologically distinct, but whose females cannot presently be distinguished (READY et al., 1982). Females at this series, presumed to be *Ps. wellcomei*, have been incriminated as vectors to man of *Leishmania braziliensis* in south-east Amazônia, Brazil (LAINSON et al., 1973). However, the recent discovery (reported here) of the males of another member of the series, *Ps. complexus*, in the same forests called into doubt the identity of the infected female sandflies found by those workers. The original epidemiological investigations were carried out at altitudes of 600-700 m above sea-level (a.s.l.) in forests on the Serra dos Carajás hills in Pará State, where *Ps. wellcomei* was thought to be the only representative of the *squamiventris* series sensu stricto and to predominate in catches of phlebotomines from human bait (WARD et al., 1973).

Both *Ps. wellcomei* and *Ps. complexus* have been reared as isofemale broods (F1 and F2) in our insectary in Belém and no brood has ever produced both male morphs. The two taxa, then, clearly represent good biological species, a conclusion supported by finding significant differences between their populations for the allele and genotype frequencies of the enzyme glucose phosphate isomerase (EC 5.3.1.9.) (READY & DA SILVA, in press). We report here further circumstantial evidence supporting our belief that *Ps. wellcomei*, rather than *Ps. complexus*, is a vector of *Leishmania braziliensis* in the region of the Serra dos Carajás (6°S, 50° 18’W).

The phlebotomine fauna of the Serra Norte (the northern Carajás range) was sampled using CDC light-traps set in forests at various altitudes for four to eight entire nights in each of the months of May, June, August, October and November of 1982. Two slopes were sampled, from the scrub (or “cerrado”)/forest boundary at 700 m a.s.l. down to the lowland forests bordering the rivers Itacaiunas and Paraupébas. Fig. 1 combines the results, for the *squamiventris* series, from both slopes (which were confirmed by catches from other traps, including the Shannon type); it summarizes two epidemiologically important findings relating to *Ps. wellcomei* and *Ps. complexus*:

(i) *Ps. wellcomei* predominates in the submontane...
(cloud) forests, where LAISON et al. (1973) worked, and whence most human infections of cutaneous leishmaniasis continue to be acquired.

(ii) The adults of both species are absent, or very scarce, in the dry season (July-September) when human infections are rarely acquired. The virtual absence of Ps. wellcomei during the dry season (even after spells of rain) was first recorded in 1974 (P.D.R.).

In most other neotropical lowland rainforests, the known (or suspected) vectors of human cutaneous leishmaniasis are usually phlebotomines of the subgenus Nyssomyia (see READY & FRAIHA, 1981).

Several anthropophilic species of this subgenus are abundant in the forests (especially in the forest canopies) on or near the Serra dos Carajás, namely Lutzomyia umbratilis (formerly sp. 260.31), Lu. anduzei and Lu. whitmani (vectors of Le. braziliensis sensu lato), Lu. flaviscutellata (vector of Le. amazonesis), and Lu. antunesi, Lu. richardwardi (formerly sp. 260.44), Lu. shawi (formerly sp. 260.43) and Lu. yuilli. Of these, Lu. shawi has an altitudinal prevalence, and a geographical range, most similar to those of Ps. wellcomei, while the other species are less numerous at altitudes over 400 m a.s.l. However, the abundance of Lu. shawi in the submontane forests during the dry season does not correlate with the apparent decline in transmission of Le. braziliensis during that season.

The zoonosis involving Ps. wellcomei and Le. braziliensis is almost certainly widely distributed in the ecologically similar forested uplands of much of south-east Amazonia and of North-east Brazil. Some stocks of Le. braziliensis isolated from man in both areas are presently indistinguishable (MCMAHON-PRAVT et al., 1982), and Ps. wellcomei has been discovered recently in Northeast Brazil and in various localities in southeast Amazonia (READY et al., 1983).

This work was supported by the Wellcome Trust (London), the Fundação SESP (Rio de Janeiro) and the POLAMAZONIA programme of the government agency SUDAM and the Companhia Vale do Rio Doce (CVRD). We are especially indebted to Dr Paulo Afonso L. Correa of the Setor de Medicina Preventiva (CVRD) for arranging transport and laboratory facilities on Serra Norte. The field work was made possible by the technical assistance of Srs. I. R. Barata, D. G. Primo, M. C. M. Souza and J. I. Almeida.

References


Accepted for publication 14th January, 1984.