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ECOLOGICAL DYNAMICS AND LEISHMANIASIS TRANSMISSION IN URBAN SAND FLIES: FIRST EVIDENCE FROM PORTO VELHO, RONDÔNIA

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Abstract

This study was conducted for the first time in remaining urban forests of Porto Velho, Rondônia, Brazil, and aimed to characterize the ecological aspects of the phlebotomine phlebotomine transmission cycle of leishmaniasis and other agents found in insects. Ten locations in urban forest fragments were selected for collection in 2021 (October, November, December), followed by quarterly collections in 2022 and 2023. HP light traps were installed in two forest strata: canopy and ground. Males were mounted and identified, while females were dissected, with the head and the last three segments used for species identification. The thorax and abdomen were grouped into pools of 2 to 10-20 specimens from the same location, species, and stratum or analyzed individually for Trypanosomatidae DNA research using PCR targeting the V7V8 fragment (18S gene). Engorged females were analyzed using PCR targeting the 358 bp fragment of the conserved region of the mitochondrial DNA (cytb) of vertebrates. A total of 2,371 phlebotomines, representing 52 species in 12 genera, were collected. The analysis revealed DNA of *Leishmania infantum* in females of *Bichromomyia flaviscutellata* (1), *Nyssomyia* complex *Antunesi* (6), *Nyssomyia umbratilis* (1), *Nyssomyia sp.* (1), *Psychodopygus ayrozai* (1), *Psychodopygus davisi* (3), *Psychodopygus paraensis* (1), and *Sciopemyia sordellii* (1). DNA of *Trypanosoma minasense* was found in two samples of females from *Ny.* complex *Antunesi* and *Psychodopygus* series *Guyanensis*. DNA of *Trypanosoma sp.* was detected in *Sc.* sordellii (4), *Sciopemyia spp.* (1), and *Sciopemyia vattierae* (1). Sequencing of the cytb confirmed *Homo sapiens*, *Dasypus novemcinctus*, and *Tamandua tetradactyla* as blood sources for different phlebotomines. The identification of *Le. infantum* in phlebotomines collected in urban forest areas highlights the need to develop further studies to identify hosts/reservoirs in these regions.

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