

Can land use influence the presence of blackflies? A case study in headwater streams of the Brazilian rainforest

Kathia C. Sonoda¹ & Valeria Lencioni²

¹*Embrapa Meio Ambiente, Jaguariúna, SP, Brazil. E-mail: kathia.sonoda@embrapa.br*

²*Climate & Ecology Unit, Research and Museum Collection Office, MUSE-Science Museum, Trento, Italy. E-mail: valeria.lencioni@muse.it*

Blackflies (Diptera: Simuliidae) are much studied for their role in health care, as most genera are vectors of onchocerciasis and mansonellosis. The aim of this study was to evaluate the potential influence of land use on blackflies abundance in low-order streams flowing in preserved, reforested and agricultural areas of the Brazilian Atlantic Forest. Larvae were collected between March and November 2015, using a D-Net device, preserved in 70% ethanol and identified to species in the lab. Chemical and physical variables were measured during insect sampling. Environmental and biological data were analysed with multivariate techniques (PCA and MDS) using RStudio. Streams in preserved and reforested areas accounted similar insect abundance and exhibited comparable chemical and physical features, so these sites were grouped together by PCA and MDS analyses. Brazilian agricultural streams are an intermediate level of human impact and showed lower abundance of Simuliidae larvae, showing that the conditions instream are better when thinking on the management and control of the diseases. What may be a negative response for nature (the decrease in community density), may be a benefit for human population when considering the One Health, as agriculture seems to help the decrease of onchocerciasis and mansonellosis vectors. Moreover, more studies should be conducted to better understand the characteristics of this “moderate impact” of Brazilian agricultural streams over the simuliid assemblage.

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