



Morphological variation in *S. minusculum* Lutz and *S. oyapockense* Floch and Abonnenc and a redescription of the larva of *S. minusculum* (Diptera, Simuliidae) in the Neotropical Region

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Abstract

Since the comprehensive taxonomic work on Brazilian Simuliidae by Shelley *et al.* (2010) we have discovered variations in characters of two species *S. minusculum* Lutz and *S. oyapockense* Floch and Abonnenc of the subgenus *Psaroniocompsa*. Variations in adult thoracic pattern and pupal gill configuration are described for *S. minusculum* and based on these a new form for the population of Chapada das Guimarães is created. The variation in pupal cocoon form from typical slipper-shaped to the rarer shoe-shaped form in the same population of *S. oyapockense s.l.* in Brazil confirms *S. sanchezi* as a junior synonym of this species. A redescription of the larva of *S. minusculum* is also provided.

Key words: *Simulium minusculum*, *Simulium oyapockense s.l.*, *Simulium sanchezi* Chapada dos Guimarães form, Simuliidae, Subgenus *Psaroniocompsa*, Morphological variations, Neotropical Region, Brazil, Argentina

Introduction

Several blackfly species of the subgenus *Psaroniocompsa* are highly anthropophilic and vectors of *Onchocerca volvulus* (Leuckart), the filarial nematode responsible for human onchocerciasis in the Amazônia focus of the disease in Brazil and Venezuela (Shelley *et al.*, 1997, 2006, 2010). This subgenus with its component 47 valid species has been reviewed in the recent book *The Simuliidae of Brazil* by Shelley *et al.* (2010), in which the taxonomy and morphological descriptions of the males, females and pupae, together with the distribution, biology and medical importance of species were discussed. Since this work, we have found further morphological variations in the adult thoracic pattern and gill configuration of two anthropophilic species, *S. oyapockense s.l.* and *S. minusculum*, both capable of allowing development of *Onchocerca volvulus*. These are presented here together with a detailed description of the larva of *S. minusculum*.

Material and methods

The techniques for collection, rearing, dissection, measurements of specimens and terminology used in this paper are those detailed in Hernández *et al.* (2007) and Shelley *et al.* (2010). All images illustrating the morphology were obtained directly from specimens using a Synoptics Digital Imaging System at The Natural History Museum, London as detailed in Hernández & Shelley (2005) and Hernández *et al.* (2005). We follow the taxonomic arrangement of Shelley *et al.* (2010) for the placement of *S. minusculum* and *S. oyapockense* within the subgenus *Psaroniocompsa*.

Voucher specimens are deposited in the Simuliidae collection at the Department of Entomology, Natural History Museum, London, United Kingdom (BMNH) and the Instituto Oswaldo Cruz, Brazil (IOC).