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**Review of the Neotropical blackfly subgenus *Chirostilbia* Enderlein
(Diptera: Simuliidae) based on adults and pupal morphology**

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Abstract

The species of the subgenus *Chirostilbia* are reviewed based on the adult and pupal morphology. All main taxonomic characters are fully illustrated with colour digital images and keys for species identification are given. Taxonomic discussions for each species and summaries of their distribution and biology are also provided. Thirteen species are now considered to be valid in the subgenus *Chirostilbia*. Since they are similar morphologically no separation into species groups

has been attempted. Lectotypes are designated for the following species: *S. distinctum* Lutz and *Trichodagmia lutziana* Enderlein [= *S. pertinax* Kollar]. *Simulium nilesi* Rambajan is transferred from its synonymy with *S. perflavum* Roubaud in the subgenus *Psilopelmia* Enderlein to *Chirostilbia* as a junior synonym of *S. subpallidum* Lutz. The thoracic pattern of the male of *S. empascae* is described and illustrated for the first time.

Key words: Simuliidae, black fly, Neotropical region, taxonomy, Brazil, genus *Simulium*, subgenus *Chirostilbia*

Introduction

The subgenus *Chirostilbia* currently includes 13 species that are solely found in South America (Crosskey & Howard, 1997, 2004; Hernández *et al.*, 2007; this paper). Some species in this subgenus, such as *S. pertinax*, bite human voraciously in parts of Brazil causing adverse effects on the tourist trade in the southern coastal region (Araujo-Coutinho *et al.* 2003). The latter species, together with *S. spinibranchium* Lutz, may be of medical importance as they have been collected biting humans in the focus of pemphigus foliaceus in the state of Mato Grosso de Sul (Eaton *et al.*, 1998). The subgenus requires taxonomic revision using modern taxonomic approaches including confirmation of species identities by reference to types. This paper deals with a biosystematic revision of the Neotropical subgenus *Chirostilbia* with morphological descriptions for females, males and pupal exuviae, thus providing the morphological framework on which cytogenetic and DNA studies link to morphological variation could be carried out. All main taxonomic characters are fully illustrated with coloured digital images, and notes on the distribution, basic biology and medical importance are given when details are available. A key for identification of adult and pupal life stages is also given.

Material and Methods

The techniques for collection, rearing, measurement of specimens, and terminology used are those detailed by Shelley *et al.* (1997). Dissections of specimens and digital images were carried out following the technique detailed in Hernández & Shelley (2005), Hernández *et al.* (2005), and Hernández *et al.*, (2007a, b). In some cases, to best illustrate the presence or absence of silver cunae on the male thorax, the specimen was tilted slightly backwards from the horizontal plane. Less emphasis has been placed on larval morphology because of the relative dearth of modern descriptions and the lack of freshly collected material in our collections. Hence, the characters to separate closely related taxa have been taken from publications of other authors. Main reference(s) are given under each species for descriptions and illustrations of the larval stage.

We followed the classification of Coscarón & Coscarón-Arias (2007) and Crosskey & Howard (2004) for the placement of *Chirostilbia* as a subgenus of *Simulium* Latreille. The following acronyms are used for depositories of specimens referred to in this paper in the text and under **Material Examined**.

AMNH	American Museum of Natural History, New York, USA
BMNH	Department of Entomology, Natural History Museum, London, United Kingdom
DERM*	Laboratório de Entomologia de la Division de Endemias Rurales, Maracay, Aragua State, Venezuela.
ICBUSP	Coleção Entomológica do Departamento de Parasitologia do Instituto de Ciências Biomédicas da Universidade de São Paulo, Brasil.
IDVC*	Instituto de Dermatologia, Villa de Cura, Aragua, Venezuela [Previously recorded as IND, Instituto Nacional de Dermatologia, Villa de Cura, Aragua in Shelley <i>et al.</i> , 1997.]
INPA	Instituto Nacional de Pesquisas da Amazônia, Manaus, Brasil
IOC	Laboratório de Simulídeos e Oncocercose (LSO), Instituto Oswaldo Cruz, Rio de Janeiro, Brasil