*Zootaxa* 2872: 49–57 (2011)
www.mapress.com/zootaxa/


**Article**

ISSN 1175-5326 (print edition)
**ZOOTAXA**
ISSN 1175-5334 (online edition)

# Cytotaxonomy of *Simulium* (*Montisimulium*) *ghoomense* (Diptera: Simuliidae) from the Darjeeling Hills, India

WILLIE HENRY[1], SACHIN THAPA[1], PETER H. ADLER[2], SUBRATA KUMAR DEY[3] & RAKESH VARMA[1]
[1]*Department of Zoology, Darjeeling Government College, Darjeeling, West Bengal 734101, India.*
*E-mail: williehenrie@yahoo.co.in; search4sachin@gmail.com*
[2]*Department of Entomology, Soils & Plant Sciences, Clemson University, Clemson, SC 29634-0315, USA.*
*E-mail: padler@clemson.edu*
[3]*School of Biotechnology, West Bengal University of Technology, BF-142, Sector 1, Salt Lake City, Kolkata 700064, West Bengal, India*

## Abstract

The polytene chromosomes are mapped for a scarce Himalayan simuliid, *Simulium* (*Montisimulium*) *ghoomense* Datta, from the Darjeeling area of India. This species has three tightly paired polytene chromosomes with a haploid number of 3. Chromosomes I, II, and III account for 39.6%, 30.3%, and 30.1% of the total complement length, respectively. The centromeres of chromosomes II and III consistently form a putative partial chromocenter. Sex chromosomes are undifferentiated and polymorphisms and sibling species are lacking in a sample of 35 larvae. This is the first chromosomal map for a species in the subgenus *Montisimulium* in India.

**Key words:** black flies, chromosomal map, cytotaxonomy, Himalayas, polytene chromosomes

## Introduction

The haematophagic behavior of female black flies contributes to their medical and economic importance. Some species are established vectors of the causal agents of parasitic diseases (Adler 2005), including members of the New and Old World tropical vector complexes responsible for human onchocerciasis (Procunier 1989). Although the analysis of polytene chromosomes from the larval silk glands has contributed to an evolutionary and taxonomic understanding of the Simuliidae, the fauna of the Indian subcontinent is less studied than the fauna of other regions of the world (Rothfels 1979).

Darjeeling, the area of this study, is situated in northern West Bengal, India, at an altitude of 2354 m in the foothills of the Eastern Sub-Himalayan region, between 26˚31’ and 27˚13’ N and between 87˚89’ and 88˚53’ E. The river systems in Darjeeling begin to flourish with the onset of the monsoon, normally in May, and last until the beginning of the winter in November. More than 19 named and a few unnamed species of black flies in five subgenera have been reported from, Darjeeling, West Bengal (Datta 1992; Adler & Crosskey 2011). However, only three species—*Simulium* (*Nevermannia*) *praelargum* Datta, *Simulium* (*Simulium*) *dentatum* Puri, and *Simulium* (*Simulium*) *singtamense* Datta & Pal—have been mapped chromosomally (Dey *et al.* 1993; Henry *et al.* 2009, 2010).

No published chromosomal maps are available for members of the subgenus *Montisimulium* in India, although maps are available for about 15 nominal species of the subgenus in the Palearctic Region (Chubareva & Petrova 2008). The present investigation, therefore, was undertaken to map the polytene chromosomes of *S.* (*Montisimulium*) *ghoomense* Datta. *Simulium ghoomense*, originally described from Ghoom by Datta (1975), is known only from Darjeeling Hills (India) and Tibet (China). Larvae of *S. ghoomense* have been taken from dead leaves and stones in association with undescribed species of the subgenus *Montisimulium* that bear similarities with *S.* (*M.*) *dattai* Takaoka & Samboon and *S.* (*M.*) *taktsangense* Takaoka & Samboon from Bhutan. *Simulium ghoomense* is reported to be ornithophilic, but little is known about its biology (Datta 1975).

*Accepted by J. Moulton: 30 Mar. 2011; published: 9 May 2011*