



Two new species of the *Simulium batoense* species-group of *Simulium (Gomphostilbia)* (Diptera: Simuliidae) from Peninsular Malaysia

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Abstract

Two new black fly species, *Simulium (Gomphostilbia) tekamense* and *Simulium (Gomphostilbia) jerantutense*, are described based on adult females emerged from pupae in Peninsular Malaysia, and assigned to the *binuanense* subgroup of the *batoense* species-group in the subgenus *Gomphostilbia*. *Simulium (G.) tekamense* sp. nov. is characterized in the female by the subcosta with 0–2 hairs, and presence of a deep notch on the apex of the mediolongitudinal ridge of the cibarium, and in the pupa by one of two paired gill filaments of the middle triplet much thicker than the counter filament. *Simulium (G.) jerantutense* sp. nov. is characterized in the female by the short claw tooth 0.46 times the length of the claw, and in the pupa by the gill filaments arranged as [2+1+(1+2)]+2 filaments from dorsal to ventral. Taxonomic notes are given to distinguish these new species from related species.

Key words: *Simulium*, black fly, Simuliidae, new species, Malaysia

Introduction

Gomphostilbia Enderlein is, as in other Southeast Asian countries, the most dominant and varied black fly subgenus of the genus *Simulium* Latreille in Peninsular Malaysia, consisting of 24 species (51.1%) of the total 47 species (Adler and Crosskey, 2013). This subgenus includes several human-biting species, of which one species, *S. (G.) asakoe* Takaoka and Davies, is a vector of an unnamed filarial parasite, possibly of animal association in Thailand, which is a potential agent of zoonotic filariasis (Fukuda et al., 2003; Ishii et al., 2008). However, the biting habits and other biological aspects of these Peninsular Malaysian species remain to be studied.

In recent surveys of pupae and larvae of black flies in Pahang of the mainland of Peninsular Malaysia, we collected two new species belonging to the subgenus *Gomphostilbia*, which are described here based on adult females reared from pupae. These new species are assigned to the *batoense* species-group recently redefined by Takaoka (2012). Taxonomic notes are given to distinguish these new species from related species.

The methods of collection, description and illustration, and terms for morphological features, follow those of Takaoka (2003) and partially those of Adler et al. (2004). The holotypes and paratypes are deposited in the Institute of Biological Sciences, Faculty of Science, University of Malaya, Kuala Lumpur, Malaysia.

Simulium (Gomphostilbia) tekamense Takaoka, Sofian-Azirun and Ya'cob, sp. nov.

Female. Body length 2.5 mm. **Head.** Nearly as wide as thorax. Frons black, shiny, moderately covered with yellowish-white scale-like recumbent short hairs interspersed with several dark simple longer hairs along each lateral margin; frontal ratio 1.54:1.00:1.92; frons:head ratio 1.00: 4.54. Fronto-ocular area well developed, narrow, directed dorsolaterally. Clypeus black, shiny, gray pruinose, densely covered with yellowish-white hairs interspersed with several dark longer hairs on each side. Labrum 0.58 times length of clypeus. Antenna composed of scape, pedicel and nine flagellomeres, medium to dark brown except scape, pedicel and base of first flagellomere yellow. Maxillary palp composed of five segments, light to medium brown, proportional lengths of

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