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Chromosomal and morphological taxonomy of a new species of black fly in the genus *Metacnephia* (Diptera: Simuliidae) from Western Anatolia, Turkey

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Abstract

A new species of black fly collected in April from streams 950–1000 m above sea level in Western Anatolia, Turkey, is described on the basis of females, males, pupae, larvae, and polytene chromosomes. *Metacnephia phrygiensis* **new species** is structurally and chromosomally distinct from all other known species of the genus, particularly in having unique fixed inversions in chromosomal arms IL and IIIL and a fenestrated cocoon.

Key words: aquatic insects, biodiversity, new species, polytene chromosomes, streams

Introduction

For the past decade, new species in the family Simuliidae have been described at a net rate of about 35 per year (Adler & Crosskey 2015a). Discovery of new species, however, outpaces the ability of the limited number of active simuliid taxonomists to provide formal descriptions. Consequently, the total number of described, living species in the world—2,177 (Adler & Crosskey 2015a)—lags behind discoveries of new species and falls far short of the predicted total biodiversity of the family (Currie & Adler 2008).

With 53 nominal species, the Holarctic genus *Metacnephia* is the fourth largest of the 26 extant genera in the family Simuliidae, representing 2.4% of the described, living species in the family (Adler & Crosskey 2015a). The genus is characterized by a number of structural and chromosomal synapomorphies, including a uniquely derived whole-arm chromosomal interchange (Crosskey 1969, Procnier 1982, Adler et al. 2004). Within the genus, putative species often are weakly differentiated and are diagnosed frequently by features of the pupal gills. The validity of numerous species of *Metacnephia* can be questionable when based strictly on often-uncritical, morphological evaluations; extreme examples are represented by descriptions of multiple species from the same area distinguished by potentially spurious differences in highly variable characters, such as the number of gill filaments. Additional character sources, such as the banding patterns of the polytene chromosomes and molecular sequences can provide tests of morphological criteria used to distinguish species (Hernández-Triana 2012, Adler & Crosskey 2015b).

We describe the morphological and chromosomal features of a new species of the genus *Metacnephia* from western Turkey. This new species represents the fifty-fourth nominal member of the genus and the third known from Turkey.

Materials and methods

Collection of material. Collections were made from three streams in Western Anatolia, Turkey. Larvae and pupae