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Taxonomic revision and cladistic analysis of the Neotropical genus *Acrochaeta* Wiedemann, 1830 (Diptera: Stratiomyidae: Sarginae)

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Table of contents

Abstract	3
Introduction	4
The Neotropical genus <i>Acrochaeta</i> Wiedemann, 1830	4
Material and methods	5
Specimens	5
Terminology	5
Taxonomic sampling	6
Cladistic analysis	6
Distribution maps	6
Results	7
Taxonomy	7
<i>Acrochaeta</i> Wiedemann, 1830	7
<i>Acrochaeta asapha</i> nov. sp.	8
<i>Acrochaeta pseudofasciata</i> nov. sp.	9
<i>Acrochaeta fasciata</i> Wiedemann, 1830	11
<i>Acrochaeta dimidiata</i> Lindner, 1949	13
<i>Acrochaeta pseudopolychaeta</i> nov. sp.	14
<i>Acrochaeta polychaeta</i> nov. sp.	15
<i>Acrochaeta convexifrons</i> (McFadden), 1971 comb. nov.	16
<i>Acrochaeta flaveola</i> species group	17
<i>Acrochaeta dichrostyla</i> nov. sp.	17
<i>Acrochaeta rhombostyla</i> nov. sp.	18
<i>Acrochaeta ruschii</i> nov. sp.	19
<i>Acrochaeta flaveola</i> Bigot, 1879	20
<i>Acrochaeta balbii</i> nov. sp.	21
<i>Acrochaeta adusta</i> Lindner, 1949	22
<i>Acrochaeta stigmata</i> nov. sp.	22
Key to adults of the known species of <i>Acrochaeta</i>	23
New combinations in Stratiomyidae	24
<i>Merosargus</i> Loew, 1855	24
<i>Merosargus chalconota</i> (Brauer), 1882 comb. nov.	24
<i>Merosargus degenerata</i> (Lindner), 1949 comb. nov.	25
<i>Merosargus longiventris</i> (Enderlein), 1914 comb. nov.	25
<i>Merosargus picta</i> (Brauer), 1882 comb. nov.	26
Subfamily Chrysochlorinae Woodley, 2001	26
<i>Chrysochlorina</i> James, 1939	26
<i>Chrysochlorina elegans</i> (Perty), 1833 comb. nov.	26
Cladistic analysis of <i>Acrochaeta</i> species	27
Paraphyly of <i>Merosargus</i> , position of <i>Acrochaeta</i> and some more general issues	30
The monophyly of <i>Acrochaeta</i>	31
Relationships between the species of <i>Acrochaeta</i>	32
Perspectives	32
Acknowledgments	32
References	33

Abstract

The Neotropical genus *Acrochaeta* Wiedemann is revised and a cladistics analysis of the genus based on morphological characters is presented. This paper raises the total number of extant *Acrochaeta* species from 10 to 14 with the description of nine new species, the synonymy of one species, the transfer of five species to other genera and the transfer of one species of *Merosargus* to *Acrochaeta*. The new species described (of which eight are from Brazil and one from Bolivia and Peru) are *Acrochaeta asapha* **nov. sp.**, *A. balbii* **nov. sp.**, *A. dichrostyla* **nov. sp.**, *A. polychaeta* **nov. sp.**, *A. pseudofasciata* **nov. sp.**, *A. pseudopolychaeta* **nov. sp.**, *A. rhombostyla* **nov. sp.**, *A. ruschii* **nov. sp.** and *A. stigmata* **nov. sp.** The primary types of all *Acrochaeta* species were studied at least from photos, when possible with the study of dissected male or female terminalia. *A. mexicana* Lindner is proposed as a junior synonym of *A. flaveola* Bigot. *M. chalconota* (Brauer) **comb. nov.**, *M. degenerata* (Lindner) **comb. nov.**, *M. longiventris* (Enderlein) **comb. nov.** and *M. picta* (Brauer) **comb. nov.** are herein transferred from *Acrochaeta* to *Merosargus* Loew, and *Chrysochlorina elegans* (Perty) **comb. nov.** is transferred from *Acrochaeta* to *Chrysochlorina* James. *A. convexifrons* (McFadden) **comb. nov.** is transferred from *Merosargus* to *Acrochaeta*. The limits of the genus and its insertion in the Sarginae are considered, and an updated generic diagnosis is

provided. All species of the genus are redescribed and diagnosed, and illustrated with photos of the habitus, thorax, wing, and drawings of the antenna and male and female terminalia. Distribution maps are provided for the species, along with an identification key for adults of all species. Parsimony analyses were carried out under equal and implied weight. Our matrix includes 43 terminal taxa—of which 26 are outgroup species from four different sargine genera—and 59 adult morphological characters. The phylogenetic analysis supports the monophyly of *Acrochaeta* based on features of the head, thorax and abdomen. An inner clade (*Acrochaeta flaveola* species group) within the genus was clearly recovered based on characters of male and female terminalia. There is good evidence for the paraphyly of *Merosargus* with *Acrochaeta* as a subclade, demanding a wider study of the subfamily for a sound solution for the genus *Merosargus*.

Key words: *Acrochaeta*, neotropics, phylogeny, Sarginae, taxonomy

Introduction

The Stratiomyidae are small to fairly big flies, with body length varying from 2 to 34 mm. These flies are easily recognized by the wing venation, with radial veins concentrated more anteriorly at the wing and a small discal cell from which medial veins radiate (Woodley 2009). Woodley (1989) and subsequent papers (e.g., Woodley *et al.* 2009) indicated the Xylomyidae as the sister family of Stratiomyidae within the infraorder Stratiomyomorpha.

There are about 2,806 described species of Stratiomyidae in the world, included in 377 genera (Woodley 2001, 2011, and more recent papers). From this total, 995 species in 162 genera belong to the Neotropical diversity. The family has often been divided into 12 subfamilies: Antissinae, Beridinae, Chiromyzinae, Chrysochlorinae, Clitellarinae, Hermetiinae, Nemotelinae, Pachygastrinae, Parhadrestiinae, Raphiocerinae, Sarginae and Stratiomyinae (Woodley 2001). A recent phylogenetic analysis of the family (Brammer & Dohlen 2010) suggests that the subfamilies Antissinae, Stratiomyinae, Sarginae and Clitellariinae, in the way they have traditionally being defined, may be non-monophyletic arrangements.

The subfamily Sarginae currently has 542 worldwide described species distributed in 22 genera. Eight of these genera, with 267 described species, occur in the Neotropical Region: *Acrochaeta* Wiedemann, 1830, *Cephalochrysa* Kertész, 1912, *Himantigera* James, 1982, *Lobisquama* James, 1982, *Merosargus* Loew, 1855, *Microchrysa* Loew, 1855 *Ptecticus* Loew, 1855 and *Sargus* Fabricius, 1798. Sarginae species are mainly characterized by the basal flagellomeres compacted into an antennal complex, an aristate last antennal flagellomere, and by the bm–cu crossvein present (Woodley 2001, 2009). Some Afrotropical species of sargines, however, could have six flagellomeres and do not have a bm–cu crossvein (Woodley 2001). The taxonomy of the subfamily has received very little attention in the literature, especially for its diversity in the Neotropical Region, where the genera *Merosargus*, *Ptecticus* and *Sargus* urgently demanding taxonomic revisions (Woodley 2009).

The Neotropical genus *Acrochaeta* Wiedemann, 1830

Little has been published on the diversity of *Acrochaeta*. Most papers basically correspond to the original descriptions, as those of Perty (1833), Wiedemann (1830), Bigot (1879), Brauer (1882), Enderlein (1914) and Lindner (1949). Additional records for Neotropical species of *Acrochaeta* were made by Giglio-Tos (1893) and Lindner (1935, 1936, 1969), while James & McFadden (1982) commented on the distribution and possible relationships between the species of *Acrochaeta* in Central America. Furthermore, McFadden (1971) proposed *Histiodroma flaveola* Bigot, 1879 as a synonym of *A. fasciata* Wiedemann, 1830—currently not considered valid.

Woodley (2001) recorded ten Neotropical species of *Acrochaeta*. Sexual dimorphism in the genus is restricted to some variation in body size and coloration, and to body length. It is worth of note that there is rather significant intraspecific variation in color patterns and color intensity in species of the genus, even between specimens from the same locality when different kinds of preservatives (alcohol or pinned) are used. General body color (background and color bands) may vary within the same species between light yellow and dark brown. There is also some variation in the color of the antenna, size and position of scutum bands, color of abdominal transverse bands, length and origin of R₂₊₃, length of r–m, and extension of M₃ (which may be complete or incomplete even in different specimens of the same species).