Zootaxa 3079: 1–110 (2011)
www.mapress.com/zootaxa/

Monograph

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

ZOOTAXA

3079

Systematics of New World *Curtonotum* Macquart (Diptera: Curtonotidae)

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Magnolia Press
Auckland, New Zealand

Accepted by D. Bickel: 4 Aug. 2011; published: 28 Oct. 2011

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Systematics of New World *Curtonotum* Macquart (Diptera: Curtonotidae)
(*Zootaxa* 3079)

110 pp.; 30 cm.

28 Oct. 2011

ISBN 978-1-86977-801-9 (paperback)

ISBN 978-1-86977-802-6 (Online edition)

FIRST PUBLISHED IN 2011 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: zootaxa@mapress.com

http://www.mapress.com/zootaxa/

ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

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Abstract

The New World species of the curtonotid genus *Curtonotum* Macquart are reviewed, and all species outside the *vulpinum* and *murinum* species complexes (as defined below) are revised. Descriptions and illustrations are provided for 24 species, including 13 newly described species: *C. adusticrus* **sp. n.**, *C. atlanticum* **sp. n.**, *C. bivittatum* **sp. n.**, *C. brunneum* **sp. n.**, *C. curtispinum* **sp. n.**, *C. desperatum* **sp. n.**, *C. papillatum* **sp. n.**, *C. gracile* **sp. n.**, *C. hunkingi* **sp. n.**, *C. flavisetum* **sp. n.**, *C. floridense* **sp. n.**, *C. nigrum* **sp. n.**, and *C. scambum* **sp. n.** *Curtonotum nigripalpe* Hendel is proposed as a new junior synonym of *C. hendelianum* (Enderlein). A key to these New World species is presented and the phylogenetic relationships between them are discussed. Lectotypes are designated for *C. tumidum* Enderlein, *C. bathmedum* Hendel, *C. taeniatum* Hendel, *C. trypetipenne* Hendel, *C. impunctatum* Hendel, 1913, *nec impunctatum* Hendel, 1932 and *C. apicale* Hendel. *Curtonotum perplexum* **nom. n.**, is given as the replacement name for *C. impunctatum* Hendel, 1932 *nec impunctatum* Hendel, 1913. Two species complexes are left untreated at the species level (the *C. murinum* species complex, including *C. murinum* Hendel, *C. coriaceum* Hendel, *C. perplexum* **nom. n.**, and *C. decumanum* Bezzi; and the *C. vulpinum* species complex including *C. vulpinum* Hendel and *C. fumipenne* Hendel). Both complexes are included in the phylogenetic analysis and key.

Key words: Acalyptratae, Ephydroidea, identification key, Nearctic, Neotropical, new species, phylogeny, taxonomy

Introduction

The family Curtonotidae is a widespread group of acalyptrate flies superficially resembling drosophilids (Figures 6–13) and previously treated as a subfamily of Drosophilidae by Hendel (1917, 1928, 1932), Malloch (1930), Sturtevant (1921) and Curran (1933, 1934). Enderlein (1914, 1917) treated this group as a subfamily of Ephydridae, but Duda (1924) and Okada (1960, 1966) treated *Curtonotum* Macquart and related genera as part of the Diastatidae. In 1934 Duda placed them in their own family (Curtonotidae) and this has been widely accepted in later works (Hackman, 1960; Hennig, 1973; Tsacas, 1974, 1977; Kirk-Spriggs, 2008).

The family Curtonotidae is defined by the following combination of characters: subcosta complete, ending in costa; costa with humeral and subcostal breaks; cells *bm* and *dm* confluent; aedeagus large and C-shaped with an anteroventrally directed distiphallus; and vagina with a large membranous anteroventral pouch originating posterior to the ventral receptacle (McAlpine, 1989: 1486–1487; Meier *et al.*, 1997) (for complete diagnosis see Marshall *et al.*, 2010). Four curtonotid genera are currently recognized, *Curtonotum*, *Cyrtona sensu lato* Séguy, *Axinota* van der Wulp, and *Tigrisomyia* Kirk-Spriggs, and 66 species have been described worldwide (not including the 13 newly described herein). At least 50 new Afrotropical species (mostly *Cyrtona sensu lato*) await description (Kirk-Spriggs, 2008). All New World Curtonotidae are in the genus *Curtonotum*. *Curtonotum* as currently defined is a probably paraphyletic group most diverse in the tropics, but occurring in every zoogeographic region except the Australasian/Oceanic Region and Antarctica. As discussed below, Neotropical and southwestern Nearctic *Curtonotum* species comprise a distinct monophyletic group including the type species of the genus and here referred to as *Curtonotum sensu stricto*. *Curtonotum* in the broader sense, here referred to as *Curtonotum senso lato*, is probably paraphyletic. According to Kirk-Spriggs (pers. com.), *Cyrtona* is also paraphyletic and due to be split into multiple genera, *Cyrtona* in the current broad sense is here referred to as *Cyrtona sensu lato*.

The habits of Curtonotidae are little known. Larvae of the Afrotropical and Palaearctic *Curtonotum simile* Tsacas and the Afrotropical *C. sahaliense* Tsacas develop in locust and grasshopper egg pods (Greathead, 1959; Kirk-Spriggs, 2008). The Nearctic *C. helvum* has been reared from decaying grasshopper egg pods under laboratory conditions (Meier *et al.*, 1997). A specimen of an undescribed species in the *C. murinum* species complex (as defined herein) from Monsoon Valley, Tingo Maria, Peru, was "dug [as a puparium] from dirt in association with *Philanthus* nests" (E.I. Schlinger and E.S. Ross [CASC]) where it possibly developed as a kleptoparasite on the paralyzed bees with which the nest was stocked. Tsacas (1977) briefly reviewed the biology of Afrotropical *Curtonotum* species, noting the habit of roosting in hollow trees, a variety of mammal burrows (including those of warthogs, porcupines, and anteaters), and under shaded overhangs to avoid heat and rain. One Afrotropical species, *C. quinquevittatum* Curran, has been observed in the hundreds in recently abandoned warthog burrows (Pollock, 2002). Zimbabwean *Cyrtona sensu lato* adults are found under overhangs along rivers in the dry season and in adjacent vegetation in the rainy season (Pollock, 2002). The Palaearctic and Oriental species *Curtonotum anus* (Meigen) is known to take shelter under plants (Duda, 1934) and is common along the shaded and muddy shoreline