Zootaxa 4044 (4): 567–576
www.mapress.com/zootaxa/

Article

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

http://dx.doi.org/10.11646/zootaxa.4044.4.6
http://zoobank.org/urn:lsid:zoobank.org:pub:CC162022-2AA4-4156-A084-CC44A60634B1

A second New World hoverfly, *Toxomerus floralis* (Fabricius) (Diptera: Syrphidae), recorded from the Old World, with description of larval pollen-feeding ecology

KURT JORDAENS[1,2,6], GEORG GOERGEN[3], ASHLEY H. KIRK-SPRIGGS[4], AUDREY VOKAER[1], THIERRY BACKELJAU[2,5] & MARC DE MEYER[1]

[1]*Royal Museum for Central Africa, Invertebrates Section and JEMU, Leuvensesteenweg 13, B-3080 Tervuren, BELGIUM. E-mail: kurt.jordaens@africamuseum.be; marc.de.meyer@africamuseum.be*
[2]*University of Antwerp, Evolutionary Ecology Group, Groenenborgerlaan 171, B-2020 Antwerp, BELGIUM*
[3]*International Institute of Tropical Agriculture, Biodiversity Centre, 08 BP 0932 Tri Postal, Cotonou, BENIN. E-mail: g.goergen@cgiar.org*
[4]*National Museum, Department of Entomology, P.O. Box 266, Bloemfontein 9300, SOUTH AFRICA. E-mail: ashley.kirk-spriggs@nasmus.co.za*
[5]*Royal Belgian Institute of Natural Sciences, OD Taxonomy and Phylogeny and JEMU, Vautierstraat 29, B-1000 Brussels, BELGIUM. E-mail: thierry.backeljau@naturalsciences.be*
[6]*Corresponding author. E-mail: kurt.jordaens@africamuseum.be*

Abstract

Recently (2013–2014), several hoverfly specimens from two localities in Benin and Cameroon (West and Central Africa) were caught from a species that we could not identify using existing identification keys for Afrotropical Syrphidae. Specific identification as *Toxomerus floralis* (Fabricius) was accomplished using morphology and various Neotropical identification keys. Corroboration of this identification was made by sequencing of the standard COI barcode region and a subsequent BLAST-IDS in BOLD that revealed a 100% sequence similarity with *Toxomerus floralis* from Suriname (South America). Species identification was further supported by sequencing parts of the nuclear 18S and 28S rRNA genes. The species is widespread in Togo, Benin, Nigeria and Cameroon, and eggs, larvae and adults are abundant at several localities. Yet, the full extent of its geographic distribution within tropical Africa remains to be determined. This is only the second known established introduction of a non-African hoverfly species in the Afrotropics. Interestingly, the larvae of the species have been reported as predators of Aphididae and Delphacidae but we found them to be pollenivorous, which is a rare feeding mode within the subfamily Syrphinae. Moreover, it is the only known Syrphinae species of which the larvae feed on pollen from two plant species from different families (Cyperaceae and Orobranchaceae). This example illustrates how DNA barcoding may allow a fast and accurate identification of introduced species.

Key words: 18S rRNA, 28S rRNA, Afrotropics, Central Africa, West Africa, COI, DNA barcoding, flower fly, pollenivory

Introduction

Flower flies, or hoverflies (Insecta: Diptera: Syrphidae), are a species-rich family of insects that are amongst the most important flower pollinators (Proctor *et al.* 1996). Worldwide, there are *ca*. 6,000 species, divided into four subfamilies: Eristalinae, Microdontinae, Pipizinae and Syrphinae (Thompson 2013; Mengual *et al*. 2015). Syrphinae have until recently been considered to consist almost exclusively of species with terrestrial, predatory larvae, mostly preying upon Hemiptera: Aphidoidea (Rotheray 1993; Thompson & Rotheray 1998). Exceptionally, larvae have different life histories.

Subaquatic larvae of some *Ocyptamus* Macquart species are predatory on a wide range of Coleoptera and Diptera larvae in the phytotelmata of bromeliads (Bromeliaceae) in South America (Rotheray *et al*. 2000). At least three *Allograpta* Osten Sacken species from the highlands of Costa Rica have phytophagous larvae, namely,

Accepted by C. Kehlmaier: 22 Oct. 2015; published: 20 Nov. 2015