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**A revision of Afrotropical Quasimodo flies (Diptera: Schizophora;
Curtonotidae). Part IV—the continental Afrotropical species of
Curtonotum Macquart, with descriptions of thirteen new species and a
combined phylogenetic analysis of the Curtonotidae**

ASHLEY H. KIRK-SPRIGGS¹ & BRIAN M. WIEGMANN²

¹*Department of Entomology, National Museum, P.O. Box 266, Bloemfontein 9300 and Department of Zoology and Entomology, Rhodes University, Grahamstown, 6140, South Africa. E-mail: ashley.kirk-spriggs@nasmus.co.za*

²*Department of Entomology, North Carolina State University, Raleigh, NC 27695-7613, USA. E-mail: bwiegman@ncsu.edu*



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Abstract

A first comprehensive phylogeny of the entire family Curtonotidae is generated from molecular markers and morphology. The molecular data set comprises 33 taxa (30 in-group Curtonotidae; three out-groups: *Camilla*, *Diastata*, *Drosophila*) and 4 gene regions from 3 genes: 2 non-contiguous fragments from the CPSase (carbamoylphosphate synthetase) domain of the nuclear protein coding gene CAD (= CAD1 and CAD3); a fragment from the coding region of TPI (triosephosphate isomerase); and a fragment of the mitochondrial gene CO1 (cytochrome oxidase 1). We performed Bayesian likelihood analyses in the program MrBayes 3.2; maximum likelihood analyses in the program Garli 2.0; and parsimony analysis in TNT on the concatenated genetic dataset. A data matrix of 62 discrete, morphological features of imagines was compiled from 75 taxa (70 in-group Curtonotidae taxa and five out-group exemplars: *Amiota*, *Camilla*, *Diastata*, *Drosophila*, *Stegana*), and these data are presented as Appendix II. For the combined morphological and molecular data a Bayesian likelihood analysis in the program MrBayes 3.2 and a parsimony analysis in TNT were performed, and for the morphological dataset a parsimony analysis was carried out in TNT. Results of the molecular and morphological analyses attest to the monophyly of the Curtonotidae and clearly indicate two primary clades, with *Axinota* + *Curtonotum* being sister to the remainder of the Curtonotidae. *Curtonotum sensu stricto* (*sensu* Klymko and Marshall 2011) is here adopted and ten newly-defined species-groups of the genus *Curtonotum* are recognised the: *anus*; *boeny*; *campisiphallum*; *gonzo*; *platyphallum*; *rinhatinana*; *saheliense*; *striatifrons*; *stuckenbergi*; and *uncinatum* species-groups. The following nomenclatorial changes are proposed: *Cyrtona appendiculata* Séguy, 1938 is formally re-instated as a valid species and is removed as a junior synonym of *Cyrtona pictipennis* (Thomson, 1869). The former variety name *sublineata* (Duda, 1939) is upgraded to a specific name, as *Parapsinota sublineata* (Duda, 1939). The continental Afrotropical fauna of the genus *Curtonotum* Macquart, 1844 is revised and a diagnosis of the genus is provided. Known biology, behaviour and published information on immature stages of the genus are briefly reviewed. Type material of 12 of the 13 named species (*C. angolense* Tsacas, *C. campisiphallum* Tsacas, *C. cuthbertsoni* Duda, *C. herrero* Tsacas, *C. pauliani* Tsacas, *C. platyphallum* Tsacas, *C. quinquevittatum* Curran, *C. sahelense* Tsacas, *C. sao* Tsacas, *C. simile* Tsacas, *C. striatifrons* Malloch and *C. tigrinum* Séguy), was studied and errors in previous interpretations and designation of type specimens are resolved. *Curtonotum pauliani* is the only species occurring on both the continental African mainland and Madagascar. The type specimen of *C. maculiventris* (Enderlein) is lost and a neotype is here designated. One species synonymy is proposed: *C. tigrinum* Séguy, 1933 = *C. maculiventris* (Enderlein, 1917), **syn. n.** Additional material of the aforementioned species is noted, substantially increasing their known distributions. Thirteen species are described as new, namely: *C. bicuspis* Kirk-Spriggs, **sp. n.**, *C. cimbebas* Kirk-Spriggs, **sp. n.**, *C. constance* Kirk-Spriggs, **sp. n.**, *C. freidberg* Kirk-Spriggs, **sp. n.**, *C. gonzo* Kirk-Spriggs, **sp. n.**, *C. hay* Kirk-Spriggs, **sp. n.**, *C. litoralis* Kirk-Spriggs, **sp. n.**, *C. marriott* Kirk-Spriggs, **sp. n.**, *C. mcgregor* Kirk-Spriggs, **sp. n.**, *C. moffatt* Kirk-Spriggs, **sp. n.**, *C. tsacas* Kirk-Spriggs, **sp. n.**, *C. uncinatum* Kirk-Spriggs, **sp. n.** and *C. unicuspis* Kirk-Spriggs, **sp. n.** The head and thorax, frons, wing, fifth sternite and hypandrium of the male of the 25 named species are illustrated for the first time, as well as the highly diagnostic male phallus, from both the right and left sides laterally. A key to species based on male characters is provided, and species distributions are mapped and interpreted according to major vegetation types, topography and humidity zones. The biogeographical significance of the continental Afrotropical species is discussed. Co-ordinates used to plot maps and a list of Major Habitat Types and Vegetation Types in which species occur are provided as Appendix III.

Key words: Afrotropical Region, biogeography, biology, Curtonotidae, Ephydroidea, identification key, molecular phylogenetic analysis, morphological phylogenetic analysis, new species, species-groups, systematics

Introduction

The Curtonotidae (“Quasimodo flies” or “hunchbacked flies”) are easily recognised by their hunchbacked and mottled appearance. The family occurs in all zoogeographical regions, except Antarctica. As currently defined, it comprises four genera, *i.e.*, *Axinota* van der Wulp, 1886, *Cyrtona* Séguy, 1938 (*s.l.*), *Tigrisomyia* Kirk-Spriggs,