



Systematics of *Bulbostyla*, a new subgenus of *Sarcophaga* Meigen, and change of status for *Robackina* Lopes (Diptera: Sarcophagidae)

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Abstract

Sarcophaga (*Bulbostyla*) **subgen. nov.** is described as a new subgenus of *Sarcophaga* Meigen to accommodate some species previously assigned to the subgenus *S. (Neobellieria)* Blanchard. *Sarcophaga* (*Bulbostyla*) contains nine species: *S. airosalis* **sp. nov.**, *S. cadyi* **sp. nov.** (type species), *S. cuautla* **sp. nov.**, *S. fattigina* **sp. nov.**, *S. ironalis* **sp. nov.**, *S. semimarginalis* Hall, *S. sternalis* (Reinhard), *S. subdiscalis* Aldrich and *S. yorkii* Parker. All species are described and illustrated and a key to the species is provided. The species within the subgenus are morphologically uniform externally and are distinguished mostly on male genitalic characters. Phylogenetic relationships within *Bulbostyla* are unresolved based on morphological characters and will require consideration of additional characters, such as molecular sequence data. The genus-group taxon *Robackina* Lopes is removed from synonymy with the subgenus *Sarcophaga* (*Neobellieria*) and reinstated as a valid subgenus of *Sarcophaga* (**stat. nov.**) to accommodate the single New World species *Sarcophaga triplasia* Wulp. A lectotype is designated for *S. triplasia*. The subgenus and species are redescribed and illustrated.

Key words: *Neobellieria*, flesh flies, Nearctic, Neotropical, taxonomy, phylogeny

Introduction

The cosmopolitan genus *Sarcophaga* Meigen *s.l.* includes over 875 described species divided into 161 subgenera (T. Pape, pers. comm.). A recent cladistic study of sarcophagine generic relationships, based on morphological characters, included 36 exemplar species of *Sarcophaga*, representing 31 subgenera (Giroux *et al.*, 2010). That study provided support for the monophyly of *Sarcophaga* and preliminary resolution of some subgeneric relationships within the genus. However, species-level revisions at the subgeneric level are needed because the monophyly and relationships of most of the subgenera included in *Sarcophaga* have not been tested cladistically.

The phylogenetic analysis of Giroux *et al.* (2010) included four of the ten species assigned by Pape (1996) to the New World subgenus *Neobellieria* Blanchard. *Neobellieria* was found to be polyphyletic, with the four exemplar species comprising three separate clades. The type species *S. (N.) polistensis* Hall and *S. (N.) bullata* Parker formed a monophyletic clade that was the sister group to *S. (Tolucamyia) sigilla* Reinhard. That clade was, in turn, the sister group to *S. (Pseudothyrsocnema) spinosa* Villeneuve. Giroux & Wheeler (2009) redefined *Neobellieria* *s. str.* to include five of the species previously assigned to *Neobellieria*, including *S. polistensis* and *S. bullata*, the three species previously assigned to *Tolucamyia* Dodge and one new species. This left the remaining five species previously assigned to *Neobellieria* unplaced to subgenus.

Sarcophaga (*Neobellieria*) *semimarginalis* Hall was the sister group to *Sarcophaga aldrichi* Parker (not assigned to a subgenus). The fourth species, *S. (Neobellieria) triplasia* Wulp, was the sister group to the clade *S. (Bellieriomima) uniseta* Baranov + *S. (Seniorwhitea) orientalis* Parker. The genus-group name *Robackina* Lopes, treated as a synonym of *Neobellieria* by Pape (1996), is available to accommodate *Sarcophaga triplasia*. However, no existing subgeneric name is available for *S. semimarginalis* and the closely related species *S. sternalis* (Reinhard), *S. subdiscalis* Aldrich and *S. yorkii* Parker.