

Phylogeny and systematics of *Sarcophaga* (*Heteronychia*) (Diptera: Sarcophagidae)

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Heteronychia Brauer & Bergenstamm, with 88 valid species, is one of the most species-rich subgenera of the large genus *Sarcophaga* Meigen. This paper presents the results of a four-year Ph.D. project consisting of a taxonomic revision and parsimony-based cladistic analysis of *Heteronychia* s.l. and the closely related subgenus *Discachaeta* Enderlein. The taxonomic part of the project includes the re-description of all previously known species and the description of eight species new to science. Almost all species were documented using SEM or ESEM microscopy, with a particular focus on key characters of the male terminalia. A data matrix was constructed for the cladistic analysis, containing 88 species (including two outgroups) and 86 adult male morphological characters. All species of *Discachaeta* were included in the analysis, together with *Sarcophaga* (*Notoecus*) *longestylata* Strobl, suspected to be related to *Heteronychia*. The cladistic analysis resulted in ten most parsimonious trees. The analysis supported the monophyly of *Heteronychia* + *Discachaeta* + *Notoecus* Stein, and the latter two should be included under *Heteronychia*. *Sarcophaga* *longestylata* was confirmed as a member of the well-supported Centralasiatic-Euro-Mediterranean *filia*-group of *Heteronychia*; few other species-groups were well supported, such as the strictly Mediterranean *minima*-group (10 species) and a group consisting of most former members of *Discachaeta* + *S. ferox* Villeneuve, *S. balanina* Pandellé and *S. desertorum* Salem. The topology of trees changed slightly under implied weighting with different concavity factors, but several clades were retained consistently. Considering the limited phylogenetic resolution and the presence of only a few distinct morphological groupings, the analysed species are included into one subgenus with a number of informal species-groups.

KEY WORDS: flesh flies, *Sarcophaga*, *Heteronychia*, *Discachaeta*, *Notoecus*, phylogeny, taxonomy



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