



The Culicidae (Diptera): a review of taxonomy, classification and phylogeny*

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Abstract

The taxonomy, classification and phylogeny of family Culicidae are reviewed. The application of explicit methods of phylogenetic analysis has revealed weaknesses in the traditional classification of mosquitoes, but little progress has been made to achieve a robust, stable classification that reflects evolutionary relationships. The current phenetic classification is discussed in view of phylogeny reconstructions based on cladistic analyses of morphological and molecular data. It is concluded that the generic and suprageneric relationships and the validity and monophyly of the generic and subgeneric groupings of Culicidae are in need of extensive reappraisal. If the classification is to reflect evolutionary history, changes to the nomenclature of mosquitoes are inevitable. There is strong morphological and molecular evidence that subfamily Anophelinae and tribes Aedini, Culicini and Sabethini of subfamily Culicinae are monophyletic, but the other taxonomic groupings are not demonstrably monophyletic or have not been subjected to phylogenetic analyses.

Key words: Culicidae, mosquitoes, taxonomy, classification, phylogeny, evolution, Anophelinae, Aedini, Culicini, Sabethini