

Review of the Upside-down Flies (Diptera: Neurochaetidae) of Madagascar and Africa, and Evolution of Neurochaetid Host Plant Associations

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ABSTRACT. The subgenera *Neurocytta* McAlpine and *Neurotaxis* McAlpine are raised to genera. A revised key to genera of recent Neurochaetidae and a key to species of *Neurotaxis* are given. The new species *Neurotaxis maura*, *N. despiciens*, *N. termon*, *N. kaplanae*, *N. delphis*, *N. charis*, *N. primula*, *N. vesca*, *N. freidbergi* and *N. polyaster*, all from Madagascar, are described. *Neurocytta prisca* (McAlpine) and *Neurotaxis stuckenbergi* (McAlpine) are new combinations (from *Neurochaeta*). Additional morphological details are given for *Neurocytta prisca*. Morphology of the neurochaetid antenna is reviewed. Head-downwards cursorial behaviour is recorded for almost all known Afrotropical species. Apparent host plants recorded for 11 of these are *Strelitzia* and *Ravenala* (Zingiberales: Strelitziaceae) and *Pandanus* (Pandanales: Pandanaceae). Host plant records are superimposed on a revised cladogram of neurochaetid species in an attempt to trace out evolutionary changes in fly-plant associations. An early zingiberalean plant possibly provided the plesiotypic host plant association for Neurochaetidae, and there is evidence that such a plant may have been available to the early Tertiary neurochaetid *Anthoclusia*.

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The family Neurochaetidae has been only recently described (McAlpine, 1978) and, when the family was last revised (McAlpine, 1988a, 1988b), the Afrotropical representatives were still only known from three preserved specimens. Significant new material was obtained through recent field work in Madagascar and Zimbabwe by A. Freidberg, F. Kaplan, and the author. It is probable that additional Afrotropical species await discovery, but with more than 300 specimens available, I am able to record a significant increase in knowledge of the fauna.

Previously (McAlpine, 1988a) I separated the two imperfectly known Afrotropical species as two monotypic subgenera of *Neurochaeta* McAlpine, preferring caution in view of the slight knowledge of this fauna. With the ten new species here described, it is clear that the Madagascar species form a well-defined monophyletic group with some diversity, comparable with *Neurochaeta* s.str. of the Oriental and Australian regions, also that the only known African species is phylogenetically removed from both the above groups.