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Revision of the horse fly genera *Lissimas* and *Cydistomyia* (Diptera: Tabanidae: Diachlorini) of Australia

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Abstract

Two genera of horse flies of the Tribe Diachlorini (Tabanidae), *Lissimas* Enderlein and *Cydistomyia* Taylor in Australia, are reviewed and diagnosed. *Lissimas australis* (Ricardo), the sole species in the genus in Australia, is redescribed. A key is given to 39 *Cydistomyia* species, among them 22 established species are redescribed and 17 species are described as new. The new species are: *Cydistomyia danielsorum, C. fergusoni, C. tasmaniensis, C. hardyi, C. exemplum, C. obscurus, C. sabulosus, C. monteithi, C. curvabilis, C. pilosus, C. triangularis, C. improcerus, C. fenestra, C. pruina, C. infirmus, C. innubilus,* and *C. pseudobrevior.* Six possible new species are described briefly but not named.

Key words: Tabanidae, Diachlorini, *Lissimas*, *Cydistomyia*, Australia

Introduction

The horse flies or Tabanidae (Diptera) are a familiar family of true flies comprising almost 4,400 described species (Evenhuis *et al*. 2008, Biosystematic Database of World Diptera). The Australian tabanid fauna is relatively well known because of their medical and veterinary importance. However, although known more commonly as vectors of diseases such as *Loa loa* in Africa (Dirie *et al.* 1989) and anthrax (Chainey 1993), horse flies also are important pollinators (e.g. Goldblatt *et al.* 2000; Johnson & Morita 2006).

Despite their economic importance, taxonomy within Tabanidae has been historically intractable (Oldroyd 1957; Chainey 1993), and they are among the least understood fly families in terms of modern phylogeny-based classifications or recent global monographic coverage. Many of the external colour characters used in tabanid classification change according to how specimens are collected and preserved, the age of the fly at the time of collection, and the length of time the specimen has been preserved. Most morphological characters involved in classification are structures and bare patches (calli) on the head, but taxonomic emphasis has been placed on colour patterns of the body and wings. As Chainey (1993) stated, these colour patterns "give an effect that is often more easily appreciated by the unaided eye than through a microscope" and are often variable.

This historical use of variable characters in conjunction with a general lack of reliable structural characters and the uniformity and simplicity of the genitalia below tribal level (Mackerras 1954) combine to make identification and classification in this group difficult.

The monophyly of Tabanidae is well supported by both molecular (Wiegmann *et al.* 2000) and morphological evidence (Mackerras 1954; Stuckenberg 2001; Yeates 2002). Most current authors accept Mackerras' classification of Tabanidae based on morphological characters (1954, 1955a, 1955b) and adopt the following subfamilies and tribes: Chrysopsinae (Bouvieromyiini, Chrysopsini, Rhinomyzini), Tabaninae (Diachlorini, Haematopotini, Tabanini), and Pangoniinae (Pangoniini, Philolichini, Scionini) (Chainey 1993).

Mackerras (1954) recognised 3 tribes in the subfamily Tabaninae one of which, the Haematopitini does not occur in Australia. The other two could be distinguished on the basis of the basicosta of the wings covered with dense short setulae (Tabanini) or basicosta without setulae (Diachlorini). One genus, *Tabanus*, was recognised in the Tabanini and three genera were recognised in the Diachlorini, *Lissimas*, *Cydistomyia* and *Dasybasis*. Subsequently, on the basis of examination of type specimens only of some members of the genera *Cydistomyia* and *Dasybasis* Trojan (1994a) (see also Trojan *et al*., 1997) split the tribe Diachlorini into the Lepidoselagini and the Diachlorini resulting in a number of supraspecific taxa, including *Dasybasis*, being removed from Diachlorini and transferred to Lepidoselagini (Trojan, 1994b).

Trojan (1998) considered the genus *Cydistomyia* to be restricted to the Australian and Oriental regions, along with *Chasmiella* Enderlein *partim* (Australian), *Chalybosoma* Oldroyd (Australian), *Japenoides* Oldroyd (Australian), *Neoboldimyia* Ricardo (Oriental), *Udenocera* Ricardo (Oriental), *Chasmia* Enderlein (Australian), *Lissimas* Enderlein (Australian). Among his Diachlorini, Trojan (1998) recognised only the genera