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## Revision of the subgenus *Episyrphus* (*Episyrphus*) Matsumura (Diptera: Syrphidae) in Australia

SUSAN G. WRIGHT<sup>1</sup> & JEFFREY H. SKEVINGTON<sup>2</sup>

<sup>1</sup>Queensland Museum, PO Box 3300, South Brisbane, Qld 4101, Australia

<sup>2</sup>Canadian National Collection of Insects, Arachnids and Nematodes, Agriculture and Agri-Food Canada, 960 Carling Avenue, Ottawa, Ontario, K1A 0C6, Canada

### Abstract

Three species of *Episyrphus* (*Episyrphus*) Matsumura, 1917 are here recorded in Australia: *E. (E.) viridaureus* (Wiedemann, 1824) and two new species *E. (E.) oliviae* Wright **sp. nov.** and *E. (E.) glaber* Wright **sp. nov.** A key to Australian *Episyrphus* (*Episyrphus*) species is provided, important taxonomic characters are illustrated and distributions of the three species are mapped. The distribution of *E. (E.) viridaureus* is extended to include Australia. Mitochondrial cytochrome c oxidase subunit I (COI) data are provided from some *Episyrphus* species to test morphological species concepts.

**Key words:** new species, hover flies, phenotypic plasticity

### Introduction

The genus *Episyrphus* was first described by Matsumura in 1917 (Matsumura and Adachi 1917a) however *Episyrphus* was treated as a synonym of *Syrphus* by most authors until the works of Goffe (1944), Dušek, J. and Láska, P. (1967), Hippa (1968) and Vockeroth (1969). The genus, including its two subgenera *Episyrphus* and *Asiobaccha* Virolovitch, 1976 (Thompson and Vockeroth 1989), and the closely related *Meliscaeva* Frey, 1946 are separated from all other genera of Syrphini by having black, sclerotized “dots” or setal bases along the wing margin and a tuft of pile on the anterior part of the anepisternum (Vockeroth, 1969). *Episyrphus* can be distinguished from *Meliscaeva* by the presence of a tuft of pile under the spiracle on the metepimeron. The subgenus *Asiobaccha* can be distinguished from *Episyrphus* s.s. by having a petiolate abdomen. The possession of double black bands on tergites three and four can be used to distinguish *Episyrphus* from other syrphine genera in Europe (Stubbs & Falk 1983) and can also be applied in part to the Australian and Asian faunas.

The subgenus *Episyrphus* (*Episyrphus*) currently contains twenty described species distributed in the Palearctic, Oriental, Australasian and Afrotropical regions (Vockeroth 1969; Knutson *et al.* 1975; Peck 1988; Thompson and Vockeroth 1989). The subgenus does not occur in the Nearctic and Neotropical regions (Vockeroth 1969; Vockeroth and Thompson 1981; Wirth *et al.* 1983). While there are seven African species, most occur in the Oriental and Australasian regions. The genus has been revised in the Afrotropical region with Vockeroth (1973a), Ghorpade (1981) and Kassebeer (2000) all describing new species. An additional species has been recently described from China, *E. perscitus* He and Chu (1992).

The taxonomy of *Episyrphus* (*Episyrphus*) is complicated by a high degree of intra-specific colour variation that has led to considerable confusion in the delimitation of species, in particular *Episyrphus* (*Episyrphus*) *balteatus* (De Geer, 1776). *Episyrphus* (*E.*) *balteatus*, the most widespread species, is distributed over most of the Palearctic region. Authors vary considerably in their descriptions of the sternal colour patterns and scutellar pilosity of *E. (E.) balteatus* (Matsumura and Adachi 1917b, Curran 1930, Hippa 1968, Vockeroth 1973a, Ghorpade 1981, Kumar *et al.* 1987). Kapoor *et al.* (1985) found six separate colour variants within “*E. (E.) balteatus*” in India and as the terminalia did not differ, they considered the six groups belong to a single species. However, male terminalia do not vary substantially at the species level in the Syrphini (Vockeroth 1969; Thompson pers. comm.) and it is possible that a species complex may exist rather than a single variable species (Curran 1928; Thompson pers. comm.).