



## Three new cryptic species of the genus *Merodon* Meigen (Diptera: Syrphidae) from the island of Lesvos (Greece)

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### Abstract

Descriptions are given of three new cryptic species of *Merodon* Meigen (Diptera: Syrphidae) from the island of Lesvos (Greece): *Merodon latifemoris* Radenković et Vujić **n. sp.** from the *nigritarsis* species group, *Merodon pulveris* Vujić et Radenković **n. sp.** from the *natans* species group and *Merodon puniceus* Vujić, Radenković et Pérez-Bañón **n. sp.** from the *aureus* species group. In addition to classical morphological characters, mitochondrial COI barcode sequences were generated for several specimens of each taxon.

**Key words:** hoverflies, *Merodon latifemoris*, *Merodon pulveris*, *Merodon puniceus*, *Merodon dobrogensis*, mitochondrial COI barcode sequences

### Introduction

The genus *Merodon* Meigen (Diptera: Syrphidae: Eumerini) is the second largest genus of Syrphidae in Europe where it is represented by more than 50 species (Speight 2008). *Merodon* is one of the most widespread syrphid genera in the Mediterranean region (Dirickx 1994) and it is distributed in the Palaearctic and Ethiopian regions. The morphological diagnostic characters to separate *Merodon* spp. from all other hoverflies are the presence of a triangular projection beneath the distal part of the hind femora in combination with wing-vein R<sub>4+5</sub> curving deeply into cell R<sub>5</sub>. Several species of *Merodon* are known to have underground larval development and feed on bulbs or rhizomes of monocots such as Liliaceae, Hyacinthaceae and Amaryllidaceae (Hurkmans 1993; Rotheray 1993; Ricarte *et al.* 2008). Although the biology of the immature stages of many species of *Merodon* remains insufficiently studied or often completely unknown, it is likely that all species in this group have similar habits. The diversity of bulbous plants is very high in the Eastern Mediterranean area (Bazos 2005) which fits well with the known distribution and diversity of the genus *Merodon* in this region.

DNA barcoding (Hebert *et al.* 2003) is based on the observation that a short, standardized segment of the mitochondrial genome can enable species identification and facilitate species discrimination. Our results stress that barcode sequences of a single molecular marker cannot alone define species, but it can help in their discovery. We agree with the view of Sperling and Roe (2009) in that molecular taxonomy is not a parallel approach to insect taxonomy, but rather that molecular methods make an important part of a more holistic, integrative taxonomy. This is because molecular methods provide additional characters for addressing the classical problems of identifying specimens, discovering and delimiting species, as well as determining relationships (e.g. Will *et al.* 2005; Valdecasas *et al.* 2008). A recent barcoding study by Ståhls *et al.* (2009) on *Merodon* spp. of the Lesvos Island (Greece) revealed high taxonomic congruence between information obtained from the mtDNA barcode and that