

Integrative taxonomy of Iberian *Merodon* species (Diptera, Syrphidae)

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Abstract

The genus *Merodon* Meigen, 1803 (Syrphidae, Diptera), with more than 50 European species, is primarily distributed in the Mediterranean region, there being 34 species that occur in the Iberian Peninsula. The morphological variation found within some species from the Iberian Peninsula prompted us to test their taxonomic status by integrating morphological and molecular data. We generated partial sequences of the mitochondrial, protein-coding gene cytochrome *c* oxidase subunit I (COI), the nuclear, internal transcribed spacer (ITS2) region, and the D2 region of the nuclear 28S rRNA gene. COI and ITS2 sequences were obtained for most included taxa.

The variability of the COI sequences showed great differences between the studied species groups, exhibiting an interspecific range from 0.29% to 12.5% between ingroup taxa. Closely related taxa of the *aureus* complex (e.g. *M. quercetorum* and *M. legionensis*) presented identical COI sequences. The obtained ITS2 sequences showed low intraspecific variability, and only a few taxa presented more than one genotype. Species status and delimitation were discussed for all taxa in the light of available morphological and molecular character information. Using the obtained sequence data for COI and 28S we inferred the phylogenetic relationships of the included taxa, using parsimony analysis. Separate analysis of the COI sequences identified four, quite well-supported clades within *Merodon*, the *desutrinus*, *albifrons*, *nigritarsis* and *aureus* groups. Combined analysis of the COI and 28S genes produced a topology similar to the COI topology.

Key words: *Merodon*, Syrphidae, integrative taxonomy, molecular data, phylogenetic relationships, intraspecific variation.