



A new *Typhlocharis* (Coleoptera: Carabidae: Anillina) from Spain: combining adult and larval morphological data with DNA information

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Abstract

Adult and larva of *Typhlocharis toletana* **n. sp.** (Coleoptera: Carabidae: Anillini) are described from the province of Toledo, Central Spain. Identical mitochondrial *cox1* gene haplotype suggested that the adults and larvae are conspecific. *Typhlocharis toletana* is the third species of the genus with an unguiform shape of gonocoxite 2 of the ovipositor, a character state that is considered as ancestral. However, *T. toletana* is not closely related to the other two species having a similarly shaped gonocoxite 2, as judged by their morphological characters and geographic distribution. It is concluded that this ancestral state has been kept in different lineages within *Typhlocharis*. Species relationships inferred from a preliminary molecular analysis of five *Typhlocharis* taxa are not congruent with putative morphological lineages. Finally, it was found that the larva of *T. toletana* is morphologically indistinguishable from that of *Typhlocharis* sp. described by Arndt et al. (1999).

Key words: Taxonomy, new species, *Typhlocharis toletana*, Iberian Peninsula, larval description, DNA identification, unguiform gonocoxite, lineages

Resumen

Se describe el adulto y la larva de *Typhlocharis toletana* **n. sp.** (Coleoptera: Carabidae: Anillini), procedente de la cuenca media del río Tajo (provincia de Toledo, España). La identidad conespecífica de ambos estadios se corrobora mediante el análisis de la secuencia del gen mitocondrial *cox1*. *T. toletana* es la tercera especie del género que presenta los gonocoxitos del ovipositor unguiformes, característica que se considera ancestral. Sin embargo, *T. toletana* no es parecida a las otras dos especies en relación a otros caracteres morfológicos y la distribución geográfica. Se concluye que dicha característica ancestral se ha conservado en diferentes linajes de *Typhlocharis*. Las relaciones derivadas de un estudio molecular de cinco especies de *Typhlocharis* no son congruentes con las que se derivan de los supuestos linajes basados en caracteres morfológicos. Finalmente, se halla que la larva de *T. toletana* es indistinguible morfológicamente de la de *Typhlocharis* sp. descrita por Arndt et al. (1999).

Palabras clave. Taxonomía, nueva especie, *Typhlocharis toletana*, Península Ibérica, larva, taxonomía molecular, gonocoxito unguiforme, linajes

Introduction

The genus *Typhlocharis* Dieck, 1869 is a member of the tribe Anillini characterised by a number of setae in the elytral umbilicate series between 4 + 4 and 4+1, instead of the 4+ 5 formula found in the rest of Anillini (Ortuño & Sendra 2007). Likewise, the humeral setal group is evenly distributed in *Typhlocharis*, whereas it is more irregular in the related genera. The genus is also distinct because of the tubular shape of gonocoxite 2 of