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## Intraspecific variation in *Typhlocharis* Dieck, 1869 (Coleoptera, Carabidae, Anillini): the case of two new species of the *baetica* group

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### Abstract

Two new species of *Typhlocharis* Dieck, 1869 from the southwest of the Iberian Peninsula included in *baetica* species group are described: *T. acutangula* n. sp. and *T. mixta* n. sp. The new species can be easily recognized by the presence of an anterodistal dentiform projection in metatibia (*T. acutangula* sp.n) and pseudotetramery and a medial tooth in clypeus (*T. mixta* sp.n), features not observed in any other species of the group, but present in *quadridentata* and *gomezi* groups respectively. An updated key of *baetica* group is provided. The large series of *T. mixta* n. sp. allowed a good study of intraspecific variation, which is detailed and compared within the genus. Implications for the systematics and relations of the *baetica* group are discussed. Intraspecific variations are grouped in four categories: individual variations in shape, size and proportions, alterations in chaetotaxy, asymmetries, and teratologies or malformations. Finally, implications and problems of intraspecific variability for the systematics of the genus are discussed.

**Key words:** Intraspecific variation, systematic, taxonomy, Iberian Peninsula, *Typhlocharis*, new species, *baetica* group

### Introduction

The situation of the genus *Typhlocharis* (Coleoptera, Carabidae, Trechinae, Anillini) is getting more complex. Many new species have been described in the last few years, with the rate of descriptions increasing progressively for the last fifty years and almost exponentially in the last ten years (Zaballos & Pérez-González 2010a). The genus is the most diverse Anillini to date, with 59 known species, grouped in eight morphology-based species groups (Zaballos & Ruiz-Tapiador 1997; Zaballos & Wrase 1998; Pérez-González & Zaballos 2013c).

*Typhlocharis* is distributed in the Iberian Peninsula (58 species) and the north of Africa (3 species). All the species inhabits endogean environments and are morphologically well adapted for soil-dwelling (Jeannel 1937), but their ecology is mostly unknown, with only some preliminary hypothesis and data on dispersal mechanisms, syntopy and ecological preferences (Ortuño 2000, 2011; Pérez-González & Zaballos 2013a, c).

Scarcity of specimens is a common problem in the study of Anillini, which often have to be described with only one or very few specimens. This circumstance and the conservative morphology of the majority of Anillini genera made difficult or not possible to obtain data about intraspecific variation. *Typhlocharis* is morphologically diverse and for some species large series with up to 100 specimens have been described, but data on intraspecific variation has not been considered in detail.

The few studies that provide data on intraspecific variation showed that this variation may have important implications to the taxonomy of the genus. For example: *Typhlocharis singularis* Serrano & Aguiar, 2000 was described from a single male with an umbilicate series of 4+1 but further sampling provided more specimens, all with umbilicate series of 4+2, turning the holotype into a rare exceptional case within the species (Serrano & Aguiar 2000, 2002). In a recent paper, the study of variation in large series allowed to determinate the vicariant distribution of the populations of *Typhlocharis armata* Coiffait, 1969 and *T. silvanoides* Dieck, 1869 both sides of the Gibraltar strait (Zaballos & Pérez-González 2010b, 2011), reporting a few specimens with asymmetric