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Palaeartic osmiine bees of the genera *Hofferia* and *Stenoheriades* (Megachilidae, Osmiini): biology, taxonomy and key to species

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Abstract

Hofferia and *Stenoheriades* are closely related, species-poor genera of the osmiine bees (Megachilidae). Analysis of female pollen loads and field observations indicate that species of both genera have a strong affinity to Asteraceae as pollen hosts. Both genera use insect burrows in dead wood as nesting site, and *Hofferia schmiedeknechti* was found to build cell walls and nest plug with resin partly mixed with small pebbles. The taxonomic revision of the Palaeartic *Hofferia* and *Stenoheriades* species revealed the existence of a still undescribed species in the Levant, *Stenoheriades levantica* spec. nov.. *Stenoheriades hofferi* (Tkalčů, 1984) is synonymized with *S. coelostoma* (Benoist, 1935), which is distinct from *S. asiatica* (Friese, 1921), and *Heriades integra* Benoist, 1934, formerly considered a *Stenoheriades* species, is synonymized with *Osmia (Hoplosmia) scutellaris* Morawitz, 1868. Keys for the delimitation of *Hofferia* and *Stenoheriades* from the other Palaeartic osmiine bee genera and for the identification of the Palaeartic species are given.

Key words: Apiformes, host-plant choice, Hymenoptera, nesting behaviour

Introduction

Hofferia Tkalčů and *Stenoheriades* Tkalčů are species-poor genera of the osmiine bees (Megachilidae, Megachilinae, Osmiini), for which two and eleven species, respectively, have been described so far (Ungricht et al., 2008; Eardley & Urban, 2010; Ascher & Pickering, 2013). *Hofferia* is confined to the Palaeartic region, whereas *Stenoheriades* is distributed both in the Palaeartic and in the Afrotropical region (including Madagascar) with five and six described species, respectively (Ascher & Pickering, 2013).

Among the osmiine bees, *Hofferia* and *Stenoheriades* belong to the *Heriades* group (Michener, 2007; Praz et al., 2008). A recent molecular phylogenetic study of the Osmiini, which included one Palaeartic species each of *Hofferia* and *Stenoheriades*, revealed that the two genera are sister taxa (Praz et al., 2008). This sister-group relationship is supported by two morphological characters, which are usually not found in other taxa of the *Heriades* group, i.e. the transverse preapical ridge of male tergum 6 and the median impression on sternum 6, which bears rows of short and stiff bristles at its posterior end. The latter character, however, is lacking in *Stenoheriades eingeddica* Griswold, which is most closely related to southern African *Stenoheriades* species (Griswold, 1985, 1994), suggesting that the genus *Stenoheriades* might not be monophyletic in its current circumscription. In fact, *Stenoheriades* is divisible into four species groups, which considerably differ morphologically (Griswold, 1985).

The taxonomy of *Hofferia* is well settled, whereas the taxonomy of the Palaeartic representatives of *Stenoheriades* is in a poor state due to the rareness of most species. Over the last few years, a large number of *Hofferia* and *Stenoheriades* specimens from the Palaeartic region was investigated, which—in combination with the examination of the name-bearing type material from the Palaeartic—allowed the clarification of the taxonomy of the Palaeartic species and the assessment of floral preferences by microscopically analysing the pollen contained in the scopal brushes of collected females.

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