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Palaearctic *Hoplitis* bees of the subgenus *Stenosmia* (Megachilidae, Osmiini): biology, taxonomy and key to species

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Abstract

Hoplitis bees of the Palaearctic subgenus *Stenosmia* (Megachilidae) inhabit deserts and semideserts between southern Spain and eastern Asia. They nest in excavated burrows in the soil and collect pollen from plant taxa that typically grow in desert areas, such as *Frankenia* (Frankeniaceae), *Peganum* (Nitrariaceae), *Tamarix* (Tamaricaceae) or *Zygophyllum* (Zygophyllaceae). The taxonomic revision of the subgenus *Stenosmia* revealed the existence of four undescribed species: *Hoplitis desertorum* spec. nov. from the Levant, *H. crassipunctata* spec. nov. and *H. dispersipunctata* spec. nov. from Central Asia, and *H. gobiensis* spec. nov. from the Gobi desert. *Hoplitis denticulata* (Zanden, 1992) is synonymized with *H. jordanica* (Warncke, 1991), and *Hoplitis xinjiangense* (Wu, 2004), formerly considered a *H.* (*Stenosmia*) species, is removed from this subgenus. The type species of the subgenus *Stenosmia* Michener is fixed as *H. crassipunctata* spec. nov., which has been misidentified as *H. flavicornis* (Morawitz, 1877). Keys for the identification of the *H.* (*Stenosmia*) species are given.

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

Introduction

Among the osmiine bees (Megachilidae, Megachilinae, Osmiini), species of the *Hoplitis* subgenus *Stenosmia* Michener are typical inhabitants of deserts and semideserts. They are distributed in the desert belt that spreads from southern Spain, northern Africa, the Near East and the Arabian Peninsula to central Asia and the Gobi desert. Including taxa newly described in the present publication, *H.* (*Stenosmia*) contains 12 species. Due to their often localized occurrence in extreme habitats and the poor knowledge of the bee fauna of vast desert areas, particularly that of Central Asia, the future discovery of additional species of *H.* (*Stenosmia*) species is expected.

The subgenus *Stenosmia* was formerly treated as an osmiine bee genus of its own (Michener, 2007; Ungricht *et al*., 2008). Recent molecular phylogenetic studies revealed, however, that *Stenosmia* should be given subgeneric rank as it is derived from within the genus *Hoplitis* (Praz *et al.*, 2008) being sister to the *Hoplitis* subgenus *Pentadentosmia* Warncke (Sedivy *et al*., 2013). In fact, apart from a few characters that it does not have in common with most other *Hoplitis* taxa, such as the large stigma of the fore wing, the distinctly carinate lower half of the omaulus and the lack of lateral teeth on male tergum 6, *Stenosmia* closely corresponds morphologically to other *Hoplitis* taxa including the linear parapsidal lines and the presence of a pair of translucent basal flaps on male tergum 6. These flaps, considered to be a synapomorphy of the genus *Hoplitis*, were assumed to lack in the subgenus *Stenosmia* (Michener, 2007). A recent reevaluation of this character revealed, however, that several *H.* (*Stenosmia*) species have well developed, albeit very short basal flaps.

Due to the rareness of most species and their close resemblance to one another, particularly in the female sex, the taxonomy of *H.* (*Stenosmia*) is currently in a rather poor state despite the seminal publication by Warncke (1991) on the western Palaearctic *H.* (*Stenosmia*) species. This study has clarified the taxonomy of a number of species and contained several new species descriptions. Recently, a large number of *H.* (*Stenosmia*) specimens was investigated, which—in combination with the examination of the name-bearing type material—allowed the

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