



Description of four new species in the bee genus *Melitta* Kirby, 1802 (Hymenoptera: Melittidae)

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Abstract

Four new bee species of the genus *Melitta* Kirby, 1802 are here described: *Melitta (Cilissa) singular* Michez **sp. nov.** from East-Anatolia (Turkey), *Melitta (Cilissa) budashkini* Radchenko & Ivanov **sp. nov.** from Crimea (Ukraine), *Melitta (Cilissa) engeli* Michez **sp. nov.** from Kyrgyzstan and *Melitta (Cilissa) magnifica* Michez **sp. nov.** from Mongolia. An updated checklist of *Melitta* species of the world is provided.

Key words: Melittidae *s.l.*, Anthophila, Palaearctic, Endemism

Introduction

Bees are a diverse group of pollen eaters (Michener 2007) comprising 19,200 described species worldwide (Ascher *et al.* 2009: <http://www.discoverlife.org>). The rate of species description in recent generic revisions suggests that many species are still to be discovered (*i.e.* Pesenko & Pauly 2005; Michez *et al.* 2007; Timmerman & Kuhlmann 2009). In South Africa, for example, the recent revision of the genus *Capicola* listed 46 % of species as new (Michez *et al.* 2007) and the revision of the genus *Patellapis* counted 71 species of which 55 % are described for the first time (Timmermann & Kuhlmann 2009). Even after comprehensive taxonomic review, new species are still discovered especially in highly diverse or isolated areas thanks to new collecting (e.g. Michez & Kuhlmann 2007; Michez & Pauly 2012).

In this paper four new species of the bee genus *Melitta* Kirby, 1802 are described based on specimens collected during field trips to Crimea (Yu. I. Budashkin & S. P. Ivanov), Mongolia (H. Halada), Kyrgyzstan (M. S. Engel) and Turkey (K. Guichard). A comprehensive list of *Melitta* species is provided updating the previous world revision of Michez & Eardley (2007) (Appendix 1).

Material and methods

Genus *Melitta*. The genus *Melitta* Kirby, 1802 belongs to the Melittidae, one of the smallest families of bees (about 200 species; Michez *et al.* 2009). Monophyly of Melittidae and their phylogenetic position in the tree of bees are still debated. Even if Danforth *et al.* (2006) recently consolidated the hypotheses of basal position of Melittidae *s.l.*, the monophyly of the family is still uncertain (Danforth *et al.* 2006; Michez *et al.* 2009). Any improvement in melittid taxonomy is therefore crucial to understand the early evolution of bees.

Melitta species superficially look like *Andrena* but their scopae are limited to the hind tibia and basitarsus (no flocculus). They have three submarginal cells and mainly brownish to blackish pilosity. Synapomorphies of the