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A subgeneric revision of *Crematogaster* and discussion of regional species-groups (Hymenoptera: Formicidae)

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Abstract

Crematogaster ants are diverse, widespread and abundant in tropical, subtropical and warm-temperate climates throughout the world. The species diversity of this genus has been notoriously difficult to manage based upon morphology alone, and former attempts have generated a vaguely defined subgeneric system. I propose an improvement of the previous subgeneric classification and recognize two subgenera based upon a concurrent molecular study of the global diversity of these ants. Five of 13 former subgenera of *Crematogaster* are hereby synonymised under the subgenus *Orthocrema* Santschi: *Neocrema* Santschi **syn. nov.**, *Eucrema* Santschi **syn. nov.**, *Rhachiocrema* Mann **syn. nov.**, *Mesocrema* Santschi **syn. nov.** and *Apterocrema* Wheeler **syn. nov.**. The eight remaining subgenera are synonymised under the subgenus *Crematogaster* sensu stricto: *Decacrema* Forel **syn. nov.**, *Oxygyne* Forel **syn. nov.**, *Atopogyne* Forel **syn. nov.**, *Sphaerocrema* Santschi **syn. nov.**, *Colobocrema* Wheeler **syn. nov.**, *Paracrema* Santschi **syn. nov.**, *Physocrema* Forel **syn. nov.** and *Xiphocrema* Forel **syn. nov.**. I present keys, morphological diagnoses and illustrations for the two revised, globally distributed subgenera *Orthocrema* and *Crematogaster* sensu stricto, based upon the worker caste. The two subgenera can be distinguished from each other by a combination of features of the petiole, postpetiole and propodeal spiracle. I also provisionally circumscribe a number of species-groups within the subgenus *Crematogaster* and discuss the utility of species-groups for further taxonomic, phylogenetic and ecological research on the genus *Crematogaster.*

Key words: *Crematogaster* ants, *Orthocrema*, infrageneric classification, subgenera, species-groups, taxonomy, Myrmicinae

Introduction

The genus *Crematogaster* Lund 1831 is a global, widespread and species-rich clade within the largest subfamily of ants, the Myrmicinae. Worldwide this genus comprises currently about 467 described nominal species and about 300 subspecies names (cf. Bolton, 2011), and therefore constitutes one of the 'giant genera of ants' (Bolton, 1995a:1043). *Crematogaster* reaches its highest diversity and abundance in tropical and subtropical forest and savannah habitats, both in the Neotropical and the Palaeotropical regions. It is also well represented in warmer temperate climates of the southern Holarctic region. Its distribution can roughly be characterized as between latitudes ~50° N and ~40° S (see Fig. 1); notable gaps in this broad occurrence are absences from New Zealand, Fiji and Chile (Brown, 1973; Guénard *et al.*, 2010).

In the tropics and subtropics, *Crematogaster* ants nest predominantly arboreally in dead branches or twigs, or under tree bark or moss. A few species are known to be obligate plant-ants (see e.g. Fiala *et al.*, 1999; Feldhaar 2003a & b; Quek *et al.*, 2007). Many species further have the ability to form 'carton' from masticated wood fibres and use this carton material to various extents in nest construction or to shelter trophobionts. For example, some species use carton to seal openings of nest cavities in dead wood, and others to achieve within-nest partitioning (Longino, 2003). A subset of these carton-making species builds more elaborate independent carton nests around branches or on tree trunks. The distribution and biology of carton making in *Crematogaster* is poorly understood and requires further investigation. Ground and leaf-litter nesting also is observed in the genus, but is generally less common in tropical and subtropical species and occurs more frequently among species in temperate regions (Creighton, 1950).

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