



## A taxonomic revision of the Asian endemic subgenus *Physocrema* of the genus *Crematogaster* (Hymenoptera: Formicidae)

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### Abstract

The subgenus *Physocrema* of the genus *Crematogaster* is revised. Twelve species are recognized in the subgenus, of which two are new to science: *C. (Physocrema) tanakai* **sp. nov.** and *C. (P.) yamanei* **sp. nov.** An identification key based on the worker caste is provided. Taxonomic relationships between *C. (P.) difformis* and similar species are clarified. *Crematogaster (P.) vacca* Forel 1911 is raised to species level. The following new synonymies are proposed: *C. (P.) inflata* F. Smith 1857 = *C. (P.) moorei* Donisthorpe 1941 syn. nov.; *C. (P.) mucronata* Emery 1900 = *C. (P.) fulmeki* Forel 1922 syn. nov.; *C. (P.) vacca* Forel 1911 = *C. (P.) stethogompha* Wheeler 1919 syn. nov. = *C. (P.) stethogompha detritinodis* Wheeler 1919 syn. nov. *Crematogaster (P.) onusta* Stitz 1925 is referred to the subgenus *Physocrema*. *C. tumidula* Emery 1900 is transferred to the subgenus *Oxygyne* from *Physocrema*.

**Key words:** taxonomy, ant

### Introduction

The genus *Crematogaster* Lund 1831 (Myrmicinae: Crematogastrini) is one of the most common groups of ants and occurs worldwide but is most abundant in the tropics (Hölldobler & Wilson, 1990). The genus contains more than 900 available species-level names (Bolton *et al.*, 2006) and is a hyperdiverse genus similar to *Camponotus* and *Pheidole*. A survey of ants carried out in a lowland rainforest in northwestern Borneo found that *Crematogaster* comprised 14.2 % of all species found (Eguchi & Yamane, 2003). In a lowland rainforest at Poring, Sabah, it comprised 6.7 % of all species (Brühl *et al.* 1998). Apart from a few faunistic investigations (*e. g.* Longino [2003] for Costa Rica, Wu & Wang [1995] for China and Buren [1968] for North America), no comprehensive taxonomic studies have been carried out since the early twentieth century. Much taxonomic work remains to be done on *Crematogaster* ants, both in terms of species diagnosis and phylogenetic evaluation. The resolution of such taxonomic subjects requires careful analysis of character variation using colony samples from wide-ranging geographic areas.

A subgeneric classification of the genus was established by Santschi (1918), Emery (1922) and Wheeler (1922). Currently, the genus is conventionally divided into 16 subgenera (Bolton, 1995, 2003, 2006), but the traditional subgenera include taxonomically problematic ones. Diagnostic characters for the subgenera are sometimes obscure because of intra- or interspecific variation. Some subgenera are out of date and incorrect because diagnostic features are not discussed, but other subgenera are useful for taxonomic studies. Taxonomic work at the subgeneric and species group-levels would be useful (Ward, 2007), especially as the genus contains such a large number of species.

As a first attempt to deal with the higher classification of the genus, this study focused on the subgenus *Physocrema* Forel, 1912. It was established as a subgenus of *Crematogaster* (Forel, 1912) with *Crematogaster inflata* F. Smith 1857 subsequently designated as the type species by Wheeler (1913). The subgenus presently consists of 10 species and 4 subspecies (Bolton, 1995, 2006). The subgenus has been characterized by the