



## A revision of male ants of the Malagasy region (Hymenoptera: Formicidae): Key to genera of the subfamily Proceratiinae

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### Abstract

Male-based keys to the ant genera of Proceratiinae in the Malagasy region (Madagascar, Mauritius, Reunion, Comoros, and Seychelles) are presented. All three extant genera known from the Malagasy region, *Discothyrea*, *Probolomyrmex*, and *Proceratium*, and an undescribed taxon, PRm01 from Seychelles, are included. Diagnoses and remarks on the subfamily Proceratiinae and its four genera, and a character table for these genera, are given. The males of all genera are illustrated.

**Key words:** Madagascar, Mauritius, Reunion, Comoros, Seychelles, wing, palp, labrum, diagnosis, key, *Discothyrea*, *Probolomyrmex*, *Proceratium*

### Introduction

Male ants offer a wealth of information on the taxonomy, phylogeny, diversity and biology. For example, they often provide valuable characters for distinguishing genera and species in addition to those found in workers (Eguchi *et al.* 2006; Yoshimura *et al.* 2007), and understanding their phenology can provide additional insights into the life history and reproduction of many species (Kaspari *et al.* 2001).

A principal limitation to including male ants in behavioral and species-level taxonomic studies is the lack of genus-level identification tools. Bolton (2003) provided the first general summary of our current knowledge of male characters for extant genera, demonstrating that morphological information about male ants remains scarce and scattered among many sources. Further explorations and syntheses of male character systems are needed.

Previously we published male-based keys to subfamilies and ponerine genera in the Malagasy region (Yoshimura & Fisher 2007). Here we focus on the subfamily Proceratiinae. This grouping includes three extant genera, *Discothyrea*, *Proceratium* and *Probolomyrmex*, all of which are found in the Malagasy region. Previous studies have included partial male-based diagnoses of these genera. Brown (1958) provided diagnoses for males of *Discothyrea* and *Proceratium*, Ogata (1987) for *Discothyrea* and *Proceratium* in Japan, Emery (1911) for *Proceratium* (as *Sysphincta*), Baroni Urbani and De Andrade (2003) for *Proceratium*, Taylor (1965) for *Probolomyrmex*, and Brown (1975) for *Probolomyrmex* in comparison with *Platythyrea*. At least one of the proceratine genera (*Discothyrea*, *Proceratium*, or *Probolomyrmex*) was included in male-based keys for Africa (Wheeler 1922), for North America (Smith 1943), and for Japan (Yoshimura & Onoyama 2002). These three genera were assigned to the subfamily Proceratiinae when Bolton (2003) reorganized the subfamily Ponerinae. The monophyly of Proceratiinae as defined by Bolton (2003) was later confirmed by molecular phylogenetic studies (Ouellette *et al.* 2006; Brady *et al.* 2006; Moreau *et al.* 2006). Moreover, Bolton (2003) proposed several male apomorphic traits for the tribe Probolomyrmecini.

Here we provide a male-based key to all extant proceratine genera and diagnose the subfamily and genera.