



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

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### Abstract

Keys to the males of the Dolichoderinae ant genera known from the Southwest Indian Ocean islands (Comoros, Madagascar, Mauritius, Mayotte, Reunion, and Seychelles) are provided. Diagnoses, discussion, illustrations, and a character matrix are provided for all five extant genera from the region: *Aptinoma*, *Ochetellus*, *Ravavy*, *Tapinoma*, and *Technomyrmex*. A male-based synopsis of the subfamily Dolichoderinae based on the five genera is also given. The previous diagnostic characters for the included genera are reconsidered. Terminologies for male genitalia and wing cells are reviewed.

**Key words:** Comoros, Madagascar, Mauritius, Mayotte, Reunion, Seychelles, matrix table, terminology, genitalia, wing, palp, labrum, diagnosis, key, *Aptinoma*, *Ochetellus*, *Ravavy*, *Tapinoma*, *Technomyrmex*

### Introduction

Male ants can provide valuable morphological information to distinguish species, and for some groups are even more effective at distinguishing the genera or species than worker ants (Eguchi *et al.* 2006; Yoshimura *et al.* 2007, Fisher & Smith 2008, Yoshimura & Fisher 2009). The study of male characters can offer new information relevant to the phylogenetic analysis of ants. Before morphological information about males can be put to practical use, however, keys and proper diagnoses based on male characters must be developed. Such information can provide additional insights into the life history and reproduction of many species (Kaspari *et al.* 2001).

Despite the utility of such keys, few genus-level diagnoses and identification tools for male ants exist. This lack of information hinders the inclusion of males in behavioral and species-level taxonomic studies. 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 characters are therefore necessary.

This work builds on our previously published keys to male ants of the subfamilies as well as the ponerine and proceratine genera found in the Malagasy region (Yoshimura & Fisher 2007, 2009). Here we focus on the subfamily Dolichoderinae. At present, 28 extant dolichoderine genera are known worldwide, five of them in the Malagasy region.

Several studies have included descriptions of male characters found among the dolichoderine genera. Those by Shattuck (1995) and Brandão *et al.* (1999) are the most comprehensive, and provide valuable characters in the form of matrix tables. These studies build on the foundation established by Shattuck's earlier works (1992a, 1992b) which included a revised generic classification of the Dolichoderinae, generic diagnoses, and keys to genera. Before Shattuck's 1992a comprehensive synthesis, male characters of at least one of the dolichoderine genera were included in the following regional works: ants of Africa (Wheeler 1922), North America (Smith 1943), and Western and Northern Europe (Bernard 1968). Later, Yoshimura & Onoyama (2002) provided a male-based key to dolichoderine genera for Japan, and Czechowski *et al.* (2002) provided a key for Poland.

Genus-rank taxonomy in Dolichoderinae has undergone dynamic change in recent years. Since Brandão *et al.* (1999), five genera (*Aptinoma* Fisher, *Arnoldius* Dubovikoff, *Gracilidris* Wild & Cuzzo, *Nebothriomyrmex* Dubo-