



## Parasitoid phorid flies (Diptera: Phoridae) from the threatened leafcutter ant *Atta robusta* Borgmeier (Hymenoptera: Formicidae)

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### Abstract

Phorid flies are well known natural enemies of leafcutter ants, but there is no information on phorid species associated with the threatened species *Atta robusta* Borgmeier. During 2009 and 2010 we collected phorid parasitoids of *A. robusta* at Guriri Island, Espírito Santo (18°43'S; 39°45'W) and at Rio de Janeiro city (23°01'S; 43°28'W). Three new species were found: *Eibesfeldtphora breviloba* Brown, *E. digitata* Brown, and *Myrmosicarius exrobusta* Brown. These species, the attack behavior of the two species of *Eibesfeldtphora*, as well as the anti-parasitoid defense behavior of *A. robusta*, are described.

**Key words:** host-parasitoid interactions, *Atta*, *Eibesfeldtphora*, *Myrmosicarius*, Phoridae, Formicidae

### Introduction

Parasitoid flies of the family Phoridae are among the natural enemies of leafcutter ants, genus *Atta* F. (Della Lucia, 1993), and various species of the genera *Eibesfeldtphora* Disney (some as *Neodohniphora* Malloch), *Myrmosicarius* Borgmeier, *Apocephalus* Coquillett, and *Allochaeta* Borgmeier are recorded from Brazil, attacking *Atta bispharica* Forel, *Atta cephalotes* (Linnaeus), *Atta laevigata* (Smith) and *Atta sexdens* (Linnaeus) (Feener & Moss, 1990, Disney & Bragança, 2000, Brown, 2001). Five more *Atta* species occur in Brazil for which there is no information on associated phorid species, one of which, *Atta robusta* Borgmeier, was the object of this study. This is the only *Atta* species that occurs in “restinga” (sandbank) vegetation, with a geographic distribution apparently restricted to the States of Espírito Santo and Rio de Janeiro (Teixeira *et al.*, 2004; Teixeira *et al.*, 2003). Several years ago it was suggested that this *Atta* species could become extinct due to human encroachment on the restinga vegetation (Fowler, 1995; Fowler *et al.*, 1996) and recently *A. robusta* was included in the list of species threatened with extinction (Machado *et al.*, 2008).

Parasitoid phorid species of *Atta* may be species specific or parasitize more than one host species, and each *Atta* species may also be attacked by more than one phorid species (Brown, 2001). Field and laboratory studies on phorid-*Atta* interactions have shown that the parasitoid attack strategies, the host defense behaviors and the oviposition sites on the bodies of the workers of the various *Atta* species, are generally specific (Erthal & Tonhasca, 2000, Tonhasca *et al.*, 2001; Bragança *et al.*, 2003; Bragança *et al.*, 2009; Brown, 1999). The objectives of the present study were to search for phorid parasitoids associated with *A. robusta* and to observe and describe fly attack behaviors and host defense mechanisms.