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Revision of the neotropical jumping plant-lice genus *Mastigimas* (Hemiptera, Psylloidea) attacking *Cedrela* and *Toona* species (Meliaceae)

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Abstract

The small Neotropical genus *Mastigimas* with five described species is revised. Three new species are added: *Mastigimas colombianus* sp. n. from Colombia on *Cedrela montana*, *M. drepanodis* sp. n. from Brazil (Paraná) on *C. fissilis* and *M. reseri* sp. n. from Jamaica collected in light traps. Another two species are recorded from Brazil and Colombia, respectively, which are not formally described due to insufficient material. The new species are described, and illustrations and identification keys are provided for all species. The last instar immatures are described for five species. The phylogeny within *Mastigimas* is analysed, and the biogeographic and host plant relationships are discussed.

Key words: Sternorrhyncha, psyllids, Neotropics, systematics, host plant, biogeography

Introduction

Several of the 50 genera and 640–650 species of the pantropical Mahogany family (Meliaceae) provide important high-quality timber (Stevens 2001 onwards; Mabberley 2008). The monophyletic subfamily Cedreloideae is one of them with the American *Cedrela* and the Old World *Toona*. Spanish Cedar (*Cedrela odorata*), for instance, has provided over 250 years one of the most important hardwood timbers in Latin America used for structural and cabinet work. It is renowned for its stability and resistance to decay and insect attack (Pennington & Muellner 2010).

The phloem feeding jumping plant-lice of the genera *Mastigimas* Enderlein and *Bharatiana* Mathur, putative sister taxa within the subfamily Mastigimatinae (Calophyidae) (Burckhardt & Ouvrard 2012), develop naturally on *Cedrela* and *Toona*, respectively, displaying a similar vicariant distribution as their hosts. Immature *Mastigimas* live in groups on the lower leaf surface and produce large quantities of wax and honeydew. When the populations are high they can colonise the entire plant, including the leaf petioles, stems and branches of young plants causing severe damage to their hosts. The close relationship of the two plant genera is emphasised by two *Mastigimas* species which sometimes colonise planted *Toona* trees in South America. Brown & Hodkinson (1988) reported *Mastigimas cedrelae* (Schwarz, 1899) from Panama which was bred from *Toona ciliata* and which is usually associated with *Cedrela odorata*. Recently also the Brazilian *Mastigimas anjosi* Burckhardt *et al.*, 2011, whose natural host is *Cedrela fissilis*, was observed in *Toona ciliata* plantations where it inflicted severe damage to the trees (Burckhardt *et al.* 2011; Queiroz *et al.* 2013).

Usually, closely related psyllids tend to develop on closely related plants, as in the case of *Cedrela* and *Toona*. *Cedrela* comprises 17 valid species with mostly fairly restricted distributions (Pennington & Muellner 2010). Exceptions are *C. fissilis* and *C. odorata*. The species number of *Cedrela* is currently not matched by *Mastigimas* of which only five species are known with incomplete host and distributional information (Hodkinson & White 1981; Burckhardt *et al.* 2011). Recent field work and a revision of museum material suggest that the group contains at least twice as many species. Here we revise the genus describing three new species, analyse the phylogeny of its constituent species, and discuss host plant and biogeographic relationships.

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