

## The damselfly genus *Mecistogaster* (Odonata: Pseudostigmatidae) from the Brazilian Atlantic Forest with a description of three new species and a neotype designation for *M. amalia* (Burmeister, 1839)

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### Abstract

*Mecistogaster* Rambur, 1842 is a genus of Pseudostigmatidae with five species distributed from Mexico to Argentina. Four of these occur in Brazil, two of which were recorded on the Atlantic Forest, *M. amalia* (Burmeister, 1839) and *M. linearis* (Fabricius, 1776). After examining 140 specimens of *Mecistogaster amalia* it was possible to conclude that it is a complex of species and three new species are described, *M. kesselringi* sp. nov., *M. mielkei* sp. nov. and *M. nordestina* sp. nov. The males differ from each other mainly by the presence or absence of alula, the area occupied by the reddish-brown color of the mesepimeron and penis structure. The females differ mainly by the region occupied for the pale apical area of wing and epiproct shape. The problem of Burmeister's type of *M. amalia* is discussed and a neotype is erected for it. Distribution and phenology data are provided. A key for males recorded from Brazilian Atlantic Forest is presented.

**Key words:** damselflies, phenology, taxonomy, Zygoptera

### Introduction

A modern phylogenetic study suggests incorporating Pseudostigmatidae into Coenagrionidae, recognizing that clade as a subfamily (Dijkstra *et al.* 2014). We preferred, however, not adopt this classification until new phylogenetic analyzes with larger sampling and new morphological characters are done.

*Mecistogaster* Rambur, 1842 is a Neotropical genus of Pseudostigmatidae (Zygoptera) and consists of five species (Machado & Soldati 2017): *M. amalia* (Burmeister, 1839), *M. linearis* (Fabricius, 1776), *M. lucretia* (Drury, 1773), *M. modesta* Selys, 1860 and *M. ornata* Rambur, 1842. Four of these occur in Brazil, but only *M. amalia* and *M. linearis* have been recorded from Atlantic Forest (Costa *et al.* 2000; Vick & Chelmick 2001; Costa & Oldrini 2005; von Ellenrieder & Paulson 2006; Dalzochio *et al.* 2011; Irusta & Lencioni 2015; Lencioni 2017). *Mecistogaster* species are among the longest extant odonates, with abdomen length ranging from 70 to 140 mm. Their nymphs breed in phytotelmata while the adults have a distinct feeding behavior, capturing spiders and their prey directly in the webs (Fincke 1984).

There are few studies on Brazilian species of *Mecistogaster* and according to Garrison *et al.* (2010) and Heckman (2008), the genus has many taxonomic problems and urgently needs a revision. A recent study (Machado & Soldati 2017) revalidated the genus *Platystigma* Kennedy, 1920, previously considered a junior synonym of *Mecistogaster*, and described three new species. In this paper, three new species are described from the Brazilian Atlantic Forest; a key for males is presented; comments on the *M. amalia* type series are made and a neotype is erected for it. The geographic distribution and phenology of the species from the Atlantic Forest are presented.

### Material and methods

The specimens studied here are deposited in the following collections: