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NEW RECORD OF *MECISTOGASTER MODESTA* (SELYS, 1860) LARVAE (ZYGOPTERA, PSEUDOSTIGMATIDAE) ASSOCIATE WITH THE PLANT, *GUZMANIA* SP. (BROMELIACEAE) FROM COLOMBIA

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ABSTRACT

This study reports, for the first time, the occurrence of immature stages of *Mecistogaster modesta* associated with *Guzmania* sp. (Bromeliaceae) in Colombia. The study was conducted in a tropical rainforest located on the Pacific Coast of the department of Chocó in Colombia. Plants of *Guzmania* sp. were collected on April, 2012 to survey their associated fauna. The bromeliads containing *Mecistogaster modesta* larvae also had high abundance and diversity of immature stages of Coleoptera and Diptera. The discovery of *M. modesta* larvae in the Chocó Biogeographic region expands the known distribution of this species, and suggests that there are regions where *Mecistogaster modesta* and other congeneric may yet be reported in Colombia. Hence, more efforts should be made to document the distribution of this genus in Colombia, especially the species associated with bromeliads.

Keywords: Bromeliaceae; Chocó biogeographic region; *Mecistogaster modesta*; Odonata.

INTRODUCTION

The genus *Mecistogaster* ranges from Mexico through Central America and the Amazon basin, to the southeastern Brazil and northern Argentina (Garrison *et al.*, 2010). The genus comprises 10 New World species (Garrison *et al.*, 2010) four of which contains species that have been reported from Colombia: *M. jocaste* Hagen, 1869, *M. linearis* Fabricius, 1776, *M. modesta* Selys, 1860, *M. ornata* Rambur, 1842 (Pérez-Gutiérrez & Palacino-Rodríguez 2011). Larvae of the genus *Mecistogaster* Rambur, 1842 (Zygoptera, Pseudostigmatidae) are characterized by the presence of six long setae proximal to the moveable hook of labial palp and the third segment of the antenna being is less than 1.5 times as long as the second (Heckman 2008). All *Mecistogaster* spp. immatures are associated with phytotelmata, but only *M. modesta* is known to specialize on bromeliads (Hedström & Sahlén 2001).

M. modesta larvae are morphologically characterized by tarsi with dorsal setae, gills petiolate and antennae with

fine hairs near the distal articulations (Ramirez 1995). *M. modesta* is distributed from Mexico down through the moist forests of Central America into northern South America (Garrison *et al.*, 2010). The distribution of this species in South America is of particular interest as it represents the southern range limit of this species. In Colombia, adult stages have been reported from Amalfi (Antioquia) and Valle del Cauca (Altamiranda 2009; Urrutia 2005). This study was carried out aiming to evaluate the occurrence of larvae of *M. modesta* associated with *Guzmania* spp. (Bromeliaceae) in rainforests of Colombia.

MATERIAL AND METHODS

The present study was conducted in a tropical rainforest located near the El Amargal Biological station (5°41'29.44"N 77°16'18.36"W) on the Pacific Coast of the Department of Chocó in Colombia (Figure 1). This area is characterized by a mature forest with a canopy height between 35-45 m. Annual average temperature is 26.3°C and the average annual precipitation is 7245 mm. The precipitation regime is unimodal with a rainy season between April and November, and humidity of 85% (Vallejo-Joyas *et al.*, 2005).

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Ten plants of *Guzmania* sp. were collected on April of 2012 to survey the fauna within them by dissecting method. The bromeliads were located at heights

between one to three meters above the ground. They had an average height of 83.22 cm, average leaf number, 27.6 and an average of 8.78 g of litter.

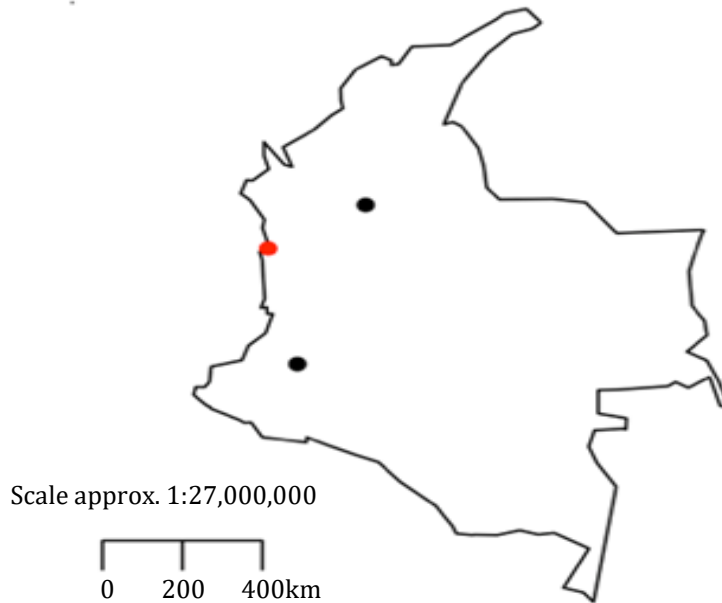


Figure 1. Distribution of *Mecistogaster modesta* in Colombia. Previous known distribution (black points) and current record (red point).

RESULTS AND DISCUSSION

The bromeliads where we found the *Mecistogaster modesta* larvae (Figure 2) had high abundance and diversity of immature Coleoptera and Diptera. Larvae of *Scirtes* sp. (Illiger, 1807) (Coleoptera, Helodidae),

Limonia sp. (Meigen, 1803) (Diptera, Tipulidae), and *Wyeomyia* sp. (Theobald) (Diptera, Culicidae) dominated the community. Those insects are known to be prey of *M. modesta* (Hammill *et al.*, 2015 Srivastava 2006; Srivastava & Bell 2009).



Figure 2. *Mecistogaster modesta* immature stage living in *Guzmania* sp.

There have not been reported for Colombia of *M. modesta* inhabiting bromeliads; however in other parts of its range, *M. modesta* larvae have only been reported to develop within bromeliads (Calvert 1911; Melnychuk & Srivastava 2002). The discovery of *M. modesta* larvae in the Choco Biogeographic region expands the known species distribution within Colombia (Figure 1). The present discovery of *M. modesta* suggests that there are regions where *M. modesta* and its congeners may yet be reported be in Colombia. Further investigation should be conducted for the distribution of this genus in Colombia, especially of the one species in the genus (Hedström & Sahlén 2001) associated with bromeliads (*M. modesta*) considering the high diversity of bromeliads in Colombia (Sugden & Robins 1979). The southern range limit of *M. modesta* falls currently between Ecuador and Venezuela, and further delineation of the exact distribution of *M. modesta* in this area will improve niche models of its distribution and allow tracking of range shifts following climate change. *M. modesta* specimens will be deposited in the Museo de Historia Natural, Universidad de Los Andes, ANDES-E20319.

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