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An annotated catalogue of the Membracidae types in the Museu de Zoologia da Universidade de São Paulo, Brazil (Hemiptera: Auchenorrhyncha: Cicadomorpha)

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Abstract

Here presented is an annotated catalogue of the Membracidae types deposited at the Museu de Zoologia da Universidade de São Paulo (MZSP), with information on 106 primary types and 171 secondary types. These type specimens represent 82 nominal species currently classified in 8 treehopper subfamilies and 17 tribes. According to our estimates, at least 10 primary types and 44 secondary types are missing in the collection. A comprehensive list of literature sources, taxonomic remarks, label data and descriptions on the state of preservation of specimens are given.

Key words: Membracoidea, treehoppers, taxonomy, type specimens, catalogue

Introduction

Treehoppers in the family Membracidae (Hemiptera: Auchenorrhyncha: Membracoidea) are renowned for their morphological diversity, most notably exemplified by their curiously shaped pronota. They constitute the largest family of treehoppers and represent the most diverse Membracoidea group after Cicadellidae (Deitz and Dietrich, 1993a), with approximately 3,500 described species classified among 9 subfamilies and 47 tribes. The family is distributed worldwide, with the highest species diversity occurring in the Neotropics (McKamey, 1998a). Like most of their auchenorrhynchan relatives, membracids feed exclusively on plant sap, and are often found on soft parts of trees, shrubs, and herbs, especially plant meristems exposed to the sun. Apart from their bizarre morphology, membracids exhibit fascinating natural history traits, including a dazzling array of social and symbiotic behaviors, from solitary to gregarious species that display complex behavioral traits including maternal care of eggs and nymphs, and engage in mutualistic interactions with honeydew-harvesting Hymenoptera (Wood, 1993a; Coccoft and Rodriguez, 2005a; Lin, 2006a).

The monophyly of Membracidae is strongly supported by molecular data (Cryan *et al.*, 2000a, 2004a), and features of nymphs, wing venation, leg chaetotaxy, and male genitalia (Dietrich *et al.*, 2001a). Several contributions to membracid systematics have provided a relatively stable higher classification and a robust body of taxonomic information on the family, with extensive revisions of many tribes and genera (i.e., Deitz, 1975a; Sakakibara, 1968a, 1972b; McKamey and Deitz, 1996a; Cryan and Deitz, 1999a, 1999b; Albertson and Dietrich, 2005a, 2006a). The taxonomic literature available for the family has been catalogued in detail by Funkhouser (1927a), Metcalf and Wade (1965a), and McKamey (1998a), with a recent update consisting of a webpage that provides online access to illustrated profiles of treehopper taxa up to the genus level (Deitz and Wallace, 2010a). This last resource is frequently updated when new genera are described.

Over the last decades, there has been an increasing effort from various institutions to document their specimen holdings, which led to the publication of comprehensive listings of Membracidae types at the Museo de La Plata in Argentina (Marino de Remes Lenicov *et al.*, 2010a), the Natural History Museum in the United Kingdom (Broomfield, 1971a), and the collection of I.O. Fabricius currently housed at the Zoologisk Museum in Denmark (Zimzsen, 1964a). In addition to these published catalogues, digital type databases were recently made available by

***Vestistilus distinctus* Andrade**

Vestistilus distinctus Andrade, 1989a:263, Figs. 1–2 [photographs, lateral and frontal view], 3–6 [line drawings: male genitalia]; McKamey, 1998a: 261.

Vestistiloides distinctus Andrade, 2003: 1 [new combination].

Original repository: MZSP.

Paratype female from BOGOTA: "Bogota", "Lindig", "Riksmuseum \ Stockholm", "[red label] PARATYPUS \ [G.S. Andrade's handwriting] *Vestistilus \ distinctus \ ANDRADE, 1989*". Pinned through median carina; right forewing and left hindwing missing; right prothoracic leg broken distal to coxa, right metathoracic leg lacking tarsomeres, left metathoracic leg broken distal to femur.

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