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***Hydrellia* Robineau-Desvoidy (Diptera: Ephydriidae) from Brazil with an emphasis on the faunas from the states of Paraná and Rio de Janeiro**

FRANCISCO DE ASSIS RODRIGUES JÚNIOR^{1,4}, WAYNE NIELSEN MATHIS²
& MÁRCIA SOUTO COURI^{1,3}

¹Departamento de Entomologia, Museu Nacional/Universidade Federal do Rio de Janeiro, São Cristóvão, Quinta da Boa Vista s/nº, Rio de Janeiro, Brazil, CEP: 20940-040

²Department of Entomology, Smithsonian Institution, National Museum of Natural History, CE619, MRC 169, PO Box 37012, Washington, DC, 20013-7012, USA

³Research fellow, CNPq

⁴Corresponding author. E-mail: rodriguesjuniorfa@gmail.com

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Abstract

With more than 200 species worldwide, *Hydrellia* Robineau-Desvoidy is the largest genus of the family Ephydriidae (Diptera). However, knowledge of this genus is much reduced in Brazil and throughout the Neotropical Region, where only 8 species are known, including one from Brazil (*H. xanthocera* Cresson). The objective of this study is to review the species of *Hydrellia* from Brazil, with an emphasis on the faunas of Paraná and Rio de Janeiro states. Six new species are described: *H. bocaiuvensis* **sp. nov.** (Brazil, Paraná, Bocaiúva do Sul, 25°14.9'S, 49°8.9'W, 890 m), *H. longiseta* **sp. nov.** (Brazil, Paraná, Parque Iguaçu, 25°33.4'S, 49°13.6'W, 880 m), *H. vilelai* **sp. nov.** (Brazil, Paraná, Bocaiúva do Sul, 25°16.6'S, 48°58.5'W, 770 m), *H. simplex* **sp. nov.** (Brazil, Paraná, Parque Iguaçu, 25°33.4'S, 49°13.6'W, 880 m) e *H. schneiderae* **sp. nov.** (Brazil, Paraná, Parque Iguaçu (25°33.4'S, 49°13.6'W, 880 m), *H. similis* **sp. nov.** (Brazil, Paraná, Bocaiúva do Sul, 25°14.9'S, 49°8.9'W, 890 m). Seven new registers are recorded: *H. agitator* (Pará), *H. apalachee* (Paraná

and Rio de Janeiro), *H. calverti* (Amazonas and Paraná), *H. cavator* (Rio de Janeiro), *H. tibialis* (Amazonas, Paraná and Rio de Janeiro), *H. vulgaris* (Paraná, São Paulo, Santa Catarina and Rio de Janeiro), *H. wirthi* (Pará, Paraná and Santa Catarina). Together with *H. xanthocera*, *Hydrellia* now includes 14 species from Brazil.

Key words: Diversity, Acalyptratae, Shore-flies, Agricultural pest, Rice miner

Introduction

With more than 200 species worldwide, the shore-fly genus *Hydrellia* Robineau-Desvoidy is the largest of the family Ephydriidae (Diptera) (Mathis 2010). In the Neotropical Region, however, the fauna of *Hydrellia* is inadequately sampled and documented with only eight recorded species before this paper (Mathis & Zatwarnicki 1995). The eight species and their known distributions in the Neotropics are as follows: *H. calverti* Cresson, from Costa Rica, Ecuador, Panama, Trinidad and West Indies (Antilles, Dominica, Dominican Republic and Puerto Rico), *H. spinicornis* Cresson, from Costa Rica, *H. griseola* Fallén, from Colombia, *H. tibialis* Cresson, from Bolivia, Chile, Costa Rica, Mexico, Trinidad and Tobago and West Indies (Dominica), *H. vulgaris* Cresson, from Argentina, Chile, Costa Rica, Panama, Venezuela, Ecuador, Juan Fernandez Islands, Galapagos Islands and Uruguay, *H. osorno* Cresson, from Argentina and Chile, *H. wirthi* Korytkowski, a species of economic importance from Colombia, Costa Rica, Galapagos Islands and Peru, and *H. xanthocera* Cresson, the only species recorded previously from Brazil and also from Panama (Lizarralde de Grosso 1989, Mathis & Zatwarnicki 1995, Mathis *et al.* 2006).

Larvae of *Hydrellia* are miners in leaves and stems of various plants, such as Alismataceae, Cruciferae, Hydrocharitaceae, Lemnaceae and other plant families, mostly monocots associated with aquatic environments. A few species can be serious agricultural pests, especially in cereal crops, such as rice *Oryza sativa* Linnaeus (Poaceae) (Mathis 2010 and Zatwarnicki 1988). In Sweden, Lilljeborg (1861) first recorded *Hydrellia griseola* (Fallén) as an agricultural pest, causing substantial losses in fields of barley, oats, and timothy grass during the summer of 1860.

Since that time, numerous other countries, mainly in the Northern Hemisphere, have recorded losses due to the rice miner genus *Hydrellia*, such as the Philippines, India, Egypt, Japan and United States of America. In the latter country, significant economic losses have been recorded (Deonier 1971 and 1998, Ferino 1968, Thomas *et al.* 1971, Sain 2000 and Mathis *et al.* 2006). Lange *et al.* (1953), for example, reported damage caused by *H. griseola* at 10 to 20 percent of the rice crop from the state of California during the autumn of that year, generating an estimated loss of US\$16,000,000.

Korytkowski (1982) described the South American rice miner *H. wirthi* and included notes on its behavior and biology in addition to the first mention of the economic impact of *Hydrellia* in the Neotropical Region. This species was recorded originally only from Peru and subsequently from Colombia, Costa Rica and the United States. Mathis *et al.* (2006) recorded this species for the first time from the Nearctic Region and considered it to be an invasive species. Mathis *et al.* (2006) also recorded losses in crops of rice from the states of Texas and Louisiana. This agricultural pest of economic importance is recorded herein for the first time from Brazil.

This review is possible because of recent field work conducted by WNM in southern Brazil (2009–2010) and by FARJ in southeastern Brazil (2011–2012). The field work was part of projects to improve our knowledge of shore flies from the states of Paraná and Rio de Janeiro and to a lesser degree from Santa Catarina and São Paulo. This project resulted in the collection of numerous specimens of *Hydrellia* and included seven new country records and six new species, making a total of 14 species from Brazil. The purposes of this paper are to describe the new species and to present the new records within the context of a faunistic review of the *Hydrellia* from Brazil.

Materials and methods

Field work was conducted by WNM during 2009 and 2010, and by FARJ during 2011 and 2012 with the objective of obtaining recent material of *Hydrellia* from Brazil. The material was actively collected using entomological nets next to freshwater ecosystems and close to aquatic or semiaquatic vegetation.

Dissections and descriptions of male and female genitalia followed CLAUSEN & COOK (1971) and GRIMALDI

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