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## A Checklist of the Gyrinidae (Coleoptera: Adephaga) of Brazil

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### Abstract

A checklist of all known species of the water beetle family Gyrinidae (whirligig beetles) recorded from Brazil is assembled. This checklist is based on literature published prior to 2012. A total of 206 species and subspecies are cited for Brazil, distributed among three genera (*Enhydrus* Laporte, 1834, *Gyrinus* Geoffroy, 1762 and *Gyretes* Brullé, 1835). For each species we also include a complete account of its nomenclature including synonyms and historical combinations. The geographical distribution of each species both inside and outside of Brazil is provided.

**Key words:** Aquatic insects, whirligig beetle, Neotropics, Aquatic beetles

### Introduction

Information on the fauna that occur in a country is important for the advancement of studies on ecology, conservation and biomimics, including the use of these organisms in biomonitoring programs. So far there is no checklist of whirligig beetle (Gyrinidae) species in Brazil, a family that includes about 750 species (Jäch & Balke 2008) arranged in 14 genera (Gustafson & Miller 2013) worldwide. Species in this family occur throughout the world with representatives in all major regions except Antarctica (Miller & Bergsten 2012).

Adults and larvae of all Gyrinidae species are strictly aquatic (Jäch & Balke 2008). They are important predators in freshwater systems, and the majority of species live in running waters. According to Folkerts & Donavan (1973), in some genera (e.g. *Gyretes* and *Patrus*) adults are observed in shaded parts of water bodies or on riparian vegetation and frequently leave the water to rest by climbing onto emergent roots and leaves.

In the current classification, the family is organized into three subfamilies: Gyrininae s. str., Heterogyrinae Brinck, 1955 and Spanglerogyrinae Folkerts, 1979 (Gustafson & Miller 2013). In the Neotropical region 280 species have been recorded in four genera: *Andogyrus* Ochs, 1924, *Enhydrus* Laporte, 1834, *Gyretes* Brullé, 1835 and *Gyrinus* Geoffroy, 1862 (Spangler 1981; Archangelsky & Michat 2007; Jäch & Balke 2008), the last three of which are reported from Brazil.

*Enhydrus* currently includes four species and is distributed from Panama to southeastern Brazil (Brinck 1978). *Gyrinus* is widely distributed, with representatives in every biogeographical region. This genus currently includes nearly 200 species in four subgenera (*Gyrinus* s. str., *Gyrinulus* Zaitsev, 1907, *Neogyrinus* Hatch, 1925 and *Oreogyrinus* Ochs, 1935). *Gyretes* occurs in the Nearctic and in the Neotropics and includes more than 300 species and subspecies.

Many species recorded in Brazil were described between 1876 and 1967 by different authors, especially Régimbart, Zimmermann and Ochs. The last of these authors published numerous papers on these beetles between 1924 and 1967, often including species recorded from Brazil, making him the author who has contributed most to the taxonomy of Brazilian Gyrinidae.

In recent years, few studies have been published on Neotropical gyrinids, and most concern faunistic records (e.g., Benetti & Hamada 2003; Benetti & Garrido 2004), analysis of morphometry and dimorphism (Alvarenga *et al.* 2011), or larval descriptions (Crespo 1989; Archangelsky & Michat 2007; Michat *et al.* 2010). Recently, papers

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**APPENDIX 1.** States of Brazil and their codes.

AC: Acre	PB: Paraíba
AL: Alagoas	PE: Pernambuco
AM: Amazonas	PI: Piauí
AP: Amapá	PR: Paraná
BA: Bahia	RJ: Rio de Janeiro
CE: Ceará	RN: Rio Grande do Norte
DF: Distrito Federal	RO: Rondônia
ES: Espírito Santo	RR: Roraima
GO: Goiás	RS: Rio Grande do Sul
MA: Maranhão	SC: Santa Catarina
MG: Minas Gerais	SE: Sergipe
MS: Mato Grosso do Sul	SP: São Paulo
MT: Mato Grosso	TO: Tocantins
PA: Pará	