



## *Hygrocybe rubroalba* (*Hygrophoraceae*, *Agaricales*), a new species of sect. *Firmae* from Brazil

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### Abstract

A new *Hygrocybe* species with dimorphic basidia and spores, *H. rubroalba*, is described based on morphological and molecular data. Its peculiar features are a dry, bright red to purplish red, not or very slightly depressed pileus surface, and pure white lamellae that are adnate or emarginate rather than decurrent. It is phylogenetically close to *H. martinicensis* in sect. *Firmae*.

**Key words:** *Agaricomycetes*, *Basidiomycota*, ITS and LSU sequences, taxonomy

### Introduction

The presence of dimorphic basidia and spores in *Hygrocybe* was first recorded by Berkeley & Broome (1871) and Petch (1917) for *H. firma* from Sri Lanka. Corner (1936) provided a detailed account of basidial development in this species and also in *Hygrocybe hypohaemacta* (Corner) Pegler, from Malaysia. Heinemann (1963) placed these taxa in the new section *Firmae*, typified by *Hygrocybe firma* (Berk. & Broome) Singer. Species of section *Firmae* are pantropical in their distribution and are unknown from temperate areas (Heinemann 1966; Pegler & Fiard 1978; Pegler 1983, 1986, 1997; Lodge & Pegler 1990; Cantrell & Lodge 2001; Lodge & Ovrebo 2008; Vrinda *et al.* 2009; Senthilarasu *et al.* 2010a, b).

According to the phylogenetic analyses in Lodge *et al.* (2014) the sect. *Firmae*, as morphologically delimited, is polyphyletic. Dimorphic basidia and spores arose several times, appearing in two clades of the subgenus *Hygrocybe* (named sects. *Pseudofirmae* Lodge & Padamsee and *Velosae* Lodge, Ovrebo & Padamsee) and in one strongly supported clade (sect. *Firmae* s.s.) in subgenus *Pseudohygrocybe* Bon. Lodge *et al.* (2014) therefore emended *Firmae* to include only those species without partial veil and basidia more than five times the length of their spores.

The aim of the present paper is to describe a new species of *Hygrocybe* with dimorphic basidia and spores from the Atlantic Forest of Brazil. Phylogenetic analyses based on LSU and ITS sequences are provided to support the description of the new species. The Atlantic Forest of Brazil is a terrestrial biome which extends along the Atlantic coast of Brazil from Rio Grande do Norte state in the north to Rio Grande do Sul state in the south, and inland as far as Paraguay and the Misiones Province of Argentina. The Atlantic Forest has ecoregions within the following biome categories: tropical and subtropical moist broadleaf forests, tropical and subtropical dry broadleaf forests, tropical and subtropical grasslands, savannas, and shrublands, and mangrove forests (Dafonseca 1985). The Atlantic Forest, characterized by a high species diversity and endemism (Dafonseca 1985), is considered the fourth hottest biodiversity hotspot worldwide (Myers *et al.* 2000; Paese *et al.* 2010). Data on the variety of *Hygrocybe* species occurring in that area are still scarce and fragmented (Singer 1965; Pegler & Fiard 1978; Pegler 1997; de Meijer 2008).