



Hidden in the dry woods: Mapping the collection history and distribution of *Gymnanthes boticario*, a well-collected but very recently described species restricted to the dry vegetation of South America

LUCIANA DOS SANTOS D. DE OLIVEIRA¹, MARCELO FREIRE MORO², EIMEAR M. NIC LUGHADHA³, FERNANDO ROBERTO MARTINS², ANDRÉ LAURÊNIO DE MELO⁴, HANS-JOACHIM ESSER⁵ & MARGARETH F. SALES¹

¹Programa de Pós-Graduação em Botânica, Universidade Federal Rural de Pernambuco, Av. D. Manoel de Medeiros, s.n., Dois Irmãos, CEP 52.171-930, Recife, Pernambuco, Brazil; e-mail: lucianadiasoliveira@hotmail.com

²Programa de Pós-Graduação em Biologia Vegetal, Universidade Estadual de Campinas, Departamento de Botânica, Bloco M, CEP 13.083-970 Campinas, São Paulo, Brazil; e-mail: bio_moro@yahoo.com.br; fmartins@unicamp.br

³Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, United Kingdom; e-mail: el02kg@kew.org

⁴Universidade Federal Rural de Pernambuco, Unidade Acadêmica de Serra Talhada, Fazenda Saco s/n°, CEP: 56.900-000, Serra Talhada, Pernambuco, Brazil; e-mail: andrelaurenio@yahoo.com.br

⁵Botanische Staatssammlung München, Menzinger Strasse 67, 80638, München, Germany; e-mail: esser@bsm.mwn.de

Abstract

Botanists estimate that 80 to 90% of existing plant species have already been described and it is expected that most undescribed species are rare or narrow endemic ones. Here we map the geographical distribution of *Gymnanthes boticario*, a species described in 2010, and show that the species is not only widespread, but was well-collected in the Caatinga semiarid vegetation prior to its description. During a revision of the genus *Gymnanthes* we also found collections of *G. boticario* in the Brazilian Mato Grosso do Sul state (in Pantanal ecoregion), in Paraguay (in Cerro León dry forests) and in Bolivia (in Chiquitano dry forest ecoregion) in a pattern that closely resembles the Pleistocenic Arc Hypothesis. We map the continental distribution of *G. boticario*, report the first records of it for Bolivia, Paraguay and the Brazilian Pantanal and show the rich data available in herbaria for a plant only recently described.

Key words: Bolivia, Brazil, Chiquitano, Ecoregions of South America, Hippomaneae, Paraguay

Introduction

The Pleistocenic Arc Hypothesis

South America has a large number of different vegetation types and ecosystems, ranging from superhumid rainforest such as the Amazonian and Atlantic forests to deserts in Chilean and Peruvian coasts (Cabrera & Willink 1973, Olson *et al.* 2001). Distributed throughout South America, there are also many disjunct areas where semiarid conditions prevail, and in which there is a shortage in water availability for most of the year (Pennington *et al.* 2000, 2006a, Prado 2000). Of these, the Caatinga dry formation, a variable complex of semiarid vegetation that occupies most of the Northeastern region of Brazil, is the largest area, with some 800,000 km² (Prado 2003, IBGE [Instituto Brasileiro de Geografia e Estatística] 2004).

During part of the twentieth century, biogeographers assumed that the tropical semiarid Caatinga in Brazil and subtropical, frost prone semiarid Chaco in Argentina and Paraguay were ecologically similar and shared floristic links (Cabrera & Willink 1973, Rizzini 1979, Prado & Gibbs 1993). In a seminal paper, Prado & Gibbs (1993) tested the alleged floristic similarity between Caatinga and Chaco, plotting species distributions and showing that the links between Caatinga and Chaco were negligible, but that there were, however, many