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New species of *Preussia* with 8-celled ascospores (Sporormiaceae, Pleosporales, Ascomycota)

ÅSA KRUYS
Systematic Biology, Department of Organismal Biology, Evolutionary Biology Centre, Uppsala University, Norbyvägen 18D, SE-752 36 Uppsala, Sweden. Email: asakruys@gmail.com

Abstract

The focus of this study is on *Preussia sensu lato* species with 8-celled ascospores. Two new species, *P. alpina* and *P. octocylindrospora* are introduced based on morphological characters and discussed in relation to similar species in the genus. New records are provided from *Sporormiella corynespora, S. octomegaspora, P. octomera* and *P. octonalis*. This greatly expands or reduces their geographical distribution ranges, as well as substrate preferences. In addition, a key to the coprophilous species with 8-celled ascospores is provided.

Key words: Dothideomycetes, Fungi, systematics, taxonomy

Introduction

Preussia sensu lato (incl. *Sporormiella*) belongs in the family *Sporormiaceae* (Dothideomycetes, *sensu* Hyde *et al.* 2013, Wijayawardene *et al.* 2014) and is one of the most abundant and species-rich groups of fungi living on animal dung. They are cosmopolitan and grow on a large variety of dung types, from the smallest vole dropping to large elephant dung (Ahmed & Cain 1972, Khan & Cain 1979, Doveri 2004, Bell 2005, Barr 2009, Mungai *et al.* 2012). Although the majority of the species in the genus are coprophilous, they also occur on other substrates like plant debris, soil and wood (Cain 1961, Dugan *et al*. 1995, Guarro *et al*. 1997), or as endophytes in plants (e.g. Porras-Alfaro *et al*. 2008, 2011, Herrera *et al*. 2010, 2011, Danielsen *et al*. 2012). *Preussia* and *Sporormiella* have for long been considered closely related (von Arx & Storm 1967, von Arx & Müller 1975, Eriksson 1981), and I treat them as synonyms since molecular phylogenetic studies do not support a differentiation of *Preussia* from *Sporormiella* (Kruys & Wedin 2009, Mapperson *et al*. 2014). The taxon currently includes more than 100 species (Index Fungorum 2015). The species are morphologically characterized by brown to black pseudothecia, fissitunicate asci, and dark brown, septate ascospores. A gelatinous sheath covers each ascospore and in general each cell has a germ slit.

The majority of the species have 4-celled ascospores, but there are various multi-celled taxa (Ahmed & Cain 1972). The focus of this study is on the 8-celled *Preussia* species, and the purpose is to describe new species and records. The ascospores of this group vary in shape and size and they do not form one monophyletic clade (Kruys & Wedin 2009).

Material and Methods

This study is to large extent based on Prof. em. Nils Lundqvist´s specimens, deposited in the Museum of Evolution herbarium at Uppsala University, Sweden (UPS). Observations and measurements were made with a Leica M125 dissecting microscope, and an Olympus BX50 light microscope. Measurements of ascospores and pseudoparaphyses were made in water at 100× magnification with oil immersion and 0.5 µm precision, or at 40× magnification for the very long measurements. Other characters were measured at 40× magnifications. Measurements are presented as the range of values observed, with outlying extremes within parentheses. The size ranges are based on 20 measurements or less, depending on the amount of material available. Photographs were taken with a Nikon DS-Vi1 camera and have been edited in Adobe Photoshop CS6.

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