Mangoldia, a new lichen genus in the family Graphidaceae (Ascomycota: Ostropales)

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Abstract

The new genus Mangoldia Lücking, Parnmen & Lumbsch is described based on the new species M. australiana and also including M. atronitens. Mangoldia combines thallus and ascoma features of Phaeographis s.str. (e.g., P. dendritica and P. lecanographa), i.e. a white, ecorticate thallus and ascoma with exposed, brown disc and thin, partially split, thalline margins, with hymenial and ascospore characters of Graphis, i.e. distoseptate, hyaline ascospores which react I+ violet-blue. DNA sequence data of the nuclear large subunit ribosomal DNA (nuLSU) of M. australiana place the taxon as separate lineage within subfamily Graphidoideae tribe Graphideae, but without a resolved and supported sister-group relationship with any of the accepted genera in this tribe.

Keywords: Australia, biodiversity, Lecanoromycetes, taxonomy

Introduction

Graphidaceae Dumortier (1822: 69) is the largest family of crustose lichens and comprises a wealth of morphological and anatomical variation in features of the thallus, ascomata, hymenium, ascospores, and chemistry (Frisch et al. 2006; Rivas Plata et al. 2012a; Rivas Plata & Lumbsch 2011; Staiger 2002). Molecular phylogenies suggest that there exists some level of evolutionary constraints regarding the combination of particular characters and states (Rivas Plata et al. 2012a; Rivas Plata & Lumbsch 2011; Rivas Plata et al. 2012b). Hence, in many instances, the anatomy (e.g. ascospore-type) and chemistry is correlated with a specific thallus and ascoma morphology. For example, in the recently described tribe Graphideae Rivas Plata et al. (2012a: 113), most lineages can often be identified by morphological features, without examination of ascospores or chemistry. For example, species of Platygramme Fée (1874: 29), which belong in a clade centered around Phaeographis Müll. Arg. (Müller 1882: 336) but share well-developed and strongly carbonized labia with GraphisAdanson (1763: 11) and Allographa Chevallier (1824: 3), can be readily identified as members of the Phaeographis clade by their olive-green instead of white-gray thallus color. Yet, there are exceptions, such as the recently recognized genus Halegrapha Rivas Plata & Lücking (Lücking et al. 2011: 333), which in morphological features resembles Graphis but has Phaeographis-type hymenia and ascospores and clusters within the Phaeographis clade (Lücking et al. 2011; Rivas Plata et al. 2012b).

Besides the aforementioned species-rich clades, there are numerous small lineages within Graphidaceae, such as Heiomasia M. P. Nelsen, Lücking & Rivas Plata (Nelsen et al. 2010: 744), Phaeographopsis Sipman & Aptroot (Aptroot et al. 1997: 129), and Schistophoron Stirton (1876: 165), which have unique character combinations (Aptroot et al. 1997; Nelsen et al. 2010; Tehler et al. 2009). Their somewhat isolated placement in molecular phylogenetic trees suggests that these represent relict species from larger, mostly extinct clades (Rivas Plata et al. 2012b). Here we describe another such lineage representing a new genus found in Australia,