



Article

***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 *Graphis* Adanson (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,