



## *Orcularia*, a segregate from the lichen genera *Buellia* and *Rinodina* (Lecanoromycetes, Caliciaceae)

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### Abstract

The new lichen genus *Orcularia*, based on *Rinodina* sect. *Orcularia*, is described. It is characterized by *Orcularia*-type ascospores and filiform conidia. So far the newly described *O. elixii* as well as *O. insperata* (type species), *O. placodiomorpha* and *O. placodiomorphoides* are found to belong to this genus. Descriptions, illustrations and a key for them are provided.

**Key words:** lichenized Ascomycota, Australia, taxonomy

### Introduction

Preliminary phylogenetic studies revealed that neither *Buellia* De Notaris (apothecia without a thalline exciple) (Nordin 2000, Helms *et al.* 2003) nor *Rinodina* (Ach.) Gray (apothecia with a thalline exciple) (Nadyeina *et al.* 2010, Sheard 2010) are monophyletic. In both genera, well differentiated species or groups of species were detected, often with a unique spore type. Species or species-groups that shared other diagnostic characters in addition to the spore-type were segregated into new or resurrected genera [e.g. *Buellia* s. str. (= *Hafellia* Kalb, H. Mayrhofer & Scheidegger) with *Callispora*-type ascospores (Elix 2009); *Endohyalina* Marbach with *Dirinaria*-type ascospores (Giralt *et al.* 2010)]. This is also the case with the four species treated here, now united in the genus *Orcularia* Kalb & Giralt. However, the importance of spore-types for generic circumscription is at present not fully understood. There are examples for its usability, e.g. *Coniarthonia* Grube can be separated from *Arthonia* Ach. by its ellipsoid ascospores and all cells of  $\pm$  the same size, while they are obovate with an enlarged endcell in the latter genus (Grube 2001). Young ascospores in *Redingeria* Frisch, a recent segregation from *Ocellularia* G. Mey. sensu lato, are microcephalic, while they are macrocephalic in that genus and in *Stegobolus*, which is otherwise similar to *Redingeria* (Frisch & Kalb 2006). But there are also examples where different spore-types seem to occur in monophyletic groups (Helms *et al.* 2003, Nadyeina *et al.* 2010, Sheard 2010).

In phylogenetic trees presented by Helms *et al.* (2003) and Nadyeina *et al.* (2010), *Buellia* species usually go in the Caliciaceae, whereas *Rinodina* species all go in the Physciaceae. In most cases, the classification can be made by spore-type (Caliciaceae: ascospores without distinct wall thickenings, Physciaceae: ascospores with distinct wall thickenings). But there are a few exceptions such as *Rinodinella* H. Mayrhofer & Poelt and *Phaeorhiza* H. Mayrhofer & Poelt which are included in the Physciaceae although they possess ascospores without distinct wall thickenings. *Orcularia* seems to be another exception. Although there are no sequences available due to the rareness of the species and the lack of fresh material, the new genus is placed in Caliciaceae despite of the wall thickenings of the ascospores, because of the pigmented hypothecium and the *Bacidia*-type ascus. For the same reasons the genus *Sculptolumina* (see Marbach 2000, Giralt *et al.* 2009) is also better included in the Caliciaceae.