An overview of species richness and phylogenetic relationships in *Cortinarius* (Fungi, Agaricales) from southern Australia

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Cortinarius, the largest genus within the Agaricales (mushrooms), includes numerous species in Australia that remain poorly documented, despite their important ecological roles as ectomycorrhizal partners of forest trees. Traditional morphological taxonomy using fruiting-bodies has limited power to identify *Cortinarius* to species level. The aim of this study is to characterise the species richness of *Cortinarius* from southern Australia. Firstly, the effectiveness of ITS as a barcode has been established by comparison of this region and five protein coding genes on a subsample of 86 specimens belonging to subgenus *Dermocybe*. Secondly, the ITS region has been sequenced for a wider sample of more than 400 specimens from field surveys performed in southern Australia, including ecological monitoring programs such as FORESTCHECK in south-western Western Australia. Using an ITS intra-specific distance of 2%, results show 150 putative species of *Cortinarius*, among which the vast majority are new to science. Morphologically cryptic species are common. The contribution of southern hemisphere collections to the global phylogenetic diversity of *Cortinarius* and the importance of utilising herbarium specimens to uncover new species awaiting identification and description are discussed.

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