Four new species of sequestrate *Inocybe* from Chilean Nothofagaceae forests

Marcos V. Caiafa, Pablo Sandoval-Leiva, P. Brandon Matheny, Adriana Calle & Matthew E. Smith

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ABSTRACT

Sequestrate fungi have enclosed hypogeous, subhypogeous, or epigeous basidiomes and have lost the ability to actively discharge their spores. They can be distinguished as gasteroid (basidiome fully enclosed with a loculated hymenophore) or secotioid (basidiome with some agaricoid or pileate-stipitate features, but the lamellae are misshapen and unexposed or mostly unexposed at maturity). There are only four reports of sequestrate taxa within the ectomycorrhizal family Inocybaceae, three from Australia and one from western North America. Recent field work in Nothofagaceae forests in the Chilean coastal range revealed novel sequestrate forms of *Inocybe*. We examined specimens using a combination of morphological and molecular data from nuc rDNA internal transcribed spacer region ITS1-5.8S-ITS2 (ITS) and portions of nuc 28S rDNA (28S) and the gene encoding the second largest subunit of RNA polymerase II (*rpb2*). Here, we describe four new sequestrate *Inocybe* species, *I. ranunculiformis, I. anfractuosa, I. illariae*, and *I. nahuelbutensis*. Results of our phylogenetic analysis resolved the four new species as distinct species-level clades with strong support, suggesting that these fungi have convergently evolved sequestrate forms independently. The species described here were all placed along with members of the "smooth-spored temperate austral clade," which includes almost exclusively Australasian and South American species of *Inocybe*.