

The genus *Geosmithia* contains 11 described and several tens of undescribed species of fungi living nearly exclusively in galleries of subcorticolous insects, especially bark beetles.

In this work, a phylogenetic analysis of the genus was made using DNA sequences of four protein-coding genes, namely *TEF-1 α* , *RPB2*, *Mcm7* and *Tsr1*.

The analysis has confirmed that ecological strategies of these fungi (such as association with conifers or broad leaved trees or symbiosis with ambrosia beetles) have evolved several times in this genus.

51 species are recognized based on the obtained phylogenetic tree according to Genealogical Concordance Phylogenetic Species Recognition.

I have also tested utility of the above mentioned genes to serve as "barcode" for identification of closely related *Geosmithia* species.