



# Effect of karst rocky desertification on soil fungal communities in Southwest China

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**ABSTRACT.** Karst mountainous ecosystems are associated with karst rocky desertification (KRD), which can greatly impact soil structure and function. Despite the importance of soil microbes as a major factor maintaining ecosystem stability, we know little about the effect on soil fungal communities of KRD in karst regions. We investigated this relationship across a gradient of KRD soils from Guizhou, China by polymerase chain reaction and denaturing gradient gel electrophoresis (PCR-DGGE). Fungal diversity indices (Shannon-Wiener, richness, and evenness) significantly differed ( $P < 0.05$ ) based on KRD severity, being lowest in moderately affected areas. Cluster analysis showed that the five sites examined clustered into two main groups according to KRD grade (high and low). Moreover, a homology search using sequences recovered from PCR-DGGE bands showed that the dominant fungi in each community varied remarkably, and included *Aspergillus*, *Aphanoascus*, *Blastomyces*, *Fusarium*, *Glomus*, *Geomyces*, *Gibberella*,

*Mortierella*, *Tetracladium*, and *Tumularia* species, and an unclassified group. In conclusion, these findings demonstrate that KRD has a significant impact on soil fungal communities.

**Key words:** Fungi; PCR-DGGE; Karst; Rocky desertification; 18S rRNA