

Dissertation Title	Ascomycetes from Karst Landscape of Guizhou Province in China
Author	Jinfeng Zhang
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Advisor	Kitiphong Khongphinitbujong, Ph. D.
Co-Advisor	Assoc. Prof. Kevin David Hyde, Ph. D.

ABSTRACT

Karst landscape has become a research hotspot as it play important roles in ecosystem and provide a unique ecological environment for animals, plants and microorganisms. Although ascomycetes is the largest group within the kingdom of fungi, and numerous novel taxa were discovered from karst in recent years, a systematic taxonomy on ascomycetes from this special habitat has never been reported. In order to improve the understanding of ascomycetes from karst landscape, lots of dead woody or herbaceous plant materials were collected from Guizhou Province, China for isolation and identification by employing molecular analysis and morphological characteristics. And a total of 76 species were identified, and which are distributed into 3 classes, 15 orders, 36 families and 59 genera. Among these taxa, Dothideomycetes is the dominant group that accounts for 61.8%, and the proportion of Sordariomycetes and Leotiomycetes are 32.9% and 5.3%, respectively.

Within Dothideomycetes collected in this study, two families (Paraleptosphaeriaceae and Profundusphaeriaceae), six genera (*Hydeopsis*, *Karstiomyces*, *Neodictyospora*, *Paraleptosphaeria*, *Profundusphaeria* and *Pseudoophiosphaerella*) with 27 species were established as new to science, based on morphological characteristics and phylogenetic affinities. In addition, the natural classification placement of Eriomycetaceae and an overlooked genus *Phragmogibbera* was also resolved in this study.

The family Eriomycetaceae was initially established to accommodate five non-lichenized genera, but synonymized under Monoblastiaceae based mainly on molecular analysis. In the present study, it was resurrected as a separate family to accommodate 9 non-lichenized genera (*Eriomyces*, *Funbolia*, *Haudseptoria*, *Heleiiosa*, *Italiofungus*, *Karstiomyces*, *Neoheleiiosa*, *Phellinocrescentia* and *Pseudopassalora*) and placed within Monoblastiales, based on morphological and multi-gene phylogenetic evidence. While the genus *Phragmogibbera* has always been overlooked in previous studies and accommodated within Dothideomycetes genera *incertae sedis*. In this study, two phragmogibbera-like samples were collected and included in our phylogenetic analysis. And the results showed that *Phragmogibbera* was placed within Leptosphaeriaceae, and the genus *Praeclarispora* should be a synonym of this genus.

Among the taxa of Sordariomycetes collected in this study, one order Planisphaeriales, two families (Neoleptosporiaceae and Planisphaeriaceae), 6 genera (*Conicumisphaeria*, *Neoceratosphaeria*, *Neodiaporthe*, *Planisphaeria*, *Stellatus* and *Truncatascus*), and 13 species were introduced, based on morphological traits conjunction with phylogenetic analysis. The order Planisphaeriales was introduced to accommodate its monotypic family Planisphaeriaceae and included within the subclass Sordariomycetidae. While the family Neoleptosporiaceae was established to accommodate *Neoleptospora* species and placed within Chaetosphaeriales, based on the present phylogenetic affinities and morphological distinctions.

Another group that discovered during this study is Leotiomycetes. Although Rhytismataceae is the largest family within Leotiomycetes, there are only four species were collected, and all of these taxa were identified as new to science. The genetic relationship within Rhytismataceae has been problematic and challenged due to lack a systematic genus-level taxonomic revision in the present and previous studies. Hence, more fresh collections and molecular data are needed for revision of this family in the future study.

A brief notes for each species, genus, family and order that mentioned in this study were updated and provided, based on the current classification system and relative publications. In addition, 44 new species, 9 geographical records and 1 combination introduced in this study are as follows: Novel species: *Atractospora terrestrica*, *Conicumisphaeria vaginasporum*, *Corylicola hydei*, *Diaporthe cylindricospora*, *Dictyosporium karstium*, *Dothiorella sexualis*, *Dyfronomyces maolanensis*, *Hydeomyces pinicola*, *Hydeopsis verrucispora*, *Hypoderma paralinderae*, *Hysterobrevium karstium*, *Karstiomyces guizhouensis*, *Lophiotrema hydei*, *Leptospora hydei*, *Lophiotrema karstii*, *Neoaquastroma guizhouense*, *Neoceratosphaeria karstiea*, *Neodiaporthe reniformesporum*, *Neodictyospora karstia*, *Neoheliospora guizhouensis*, *Neoleptospora fusiformispora*, *Neophiobolus filiformesporum*, *Occultibambusa jonesii*, *Occultibambusa maolanensis*, *Ophioceras guizhouense*, *Ophiosphaerella karstii*, *Paraleptosphaeria guizhouensis*, *Paraeutypella elongiascus*, *Paraeutypella karstia*, *Phragmogibbera karstia*, *Planisphaeria karstium*, *Planisphaeria reniformisporum*, *Plenodomus karsti*, *Plenodomus macrosporium*, *Poaceascoma herbacum*, *Profundusphaeria fusiformispora*, *Pseudocoleophoma guizhouensis*, *Pseudoophiosphaerella huishuiensis*, *Stellatus guizhouensis*, *Terriera karsti*, *Terriera meitanensis*, *Terriera sigmoideospora*, *Tremateia guiyangensis*, *Truncatascus microsporium*; New geographical records: *Acrocalymma medicaginis*, *Annulohypoxylon thailandicum*, *Astrosphaeriella bambusae*, *Lophiotrema neohysterioides*, *Ophiosphaerella agrostidis*, *Ophiosphaerella chiangraiensis*, *Psilogonium macrosporium*, *Thyridaria broussonetiae*, *Tremateia chromolaenae*; New combination: *Phragmogibbera artemisiae*.

Keywords: Ascomycota, Dothideomycetes, Karst, Leotiomycetes, Phylogeny, Sordariomycetes, Taxonomy