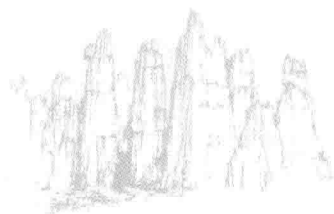


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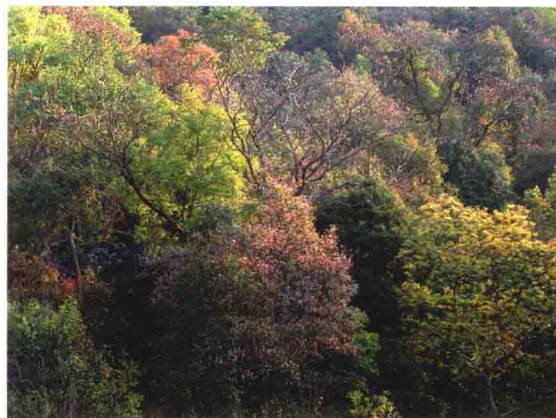
喀斯特地带性植被 及其自然演替动力

〈 Zonal Vegetation at Shilin Karst and Its Natural Successional Forces 〉

► 沈有信 著

中国科学院西双版纳热带植物园

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· 昆明 ·



半湿润常绿阔叶林 (SEBF1) 春景



半湿润常绿阔叶林 (SEBF1) 夏景
(海拔1950m, 石林县蓑衣山村)



萌生幼年林 (RF) 样地
(海拔1900m, 乃古石林)



半湿润常绿阔叶林 (SEBF1) 冬景 (海拔1950m, 石林县蓑衣山村)



月湖半湿润常绿阔叶林夏景
(月湖村, 海拔1900m)



云南松样地远景夏景
(大石林外, 海拔1900m)



研究中的草地样地 GL, 海拔1900m (石林县板栗园)



研究中的灌草地样地 SL, 海拔1900m
(石林县火车站)



研究中的灌草地样地 SL, 海拔1900m
(石林县火车站对面)



通过反复萌生而在退化岩溶山地顽强生存的云南木樨榄 (*Olea yunnanensis*)



通过反复萌生而在退化岩溶山地顽强生存的云南木樨榄 (*Olea yunnanensis*)



石隙中的清香桂
(*Sarcococca ruscifolia*)



通过反复萌生而在退化岩溶山地顽强生存的团花新木姜子 (*Neolitsea homilantha*)



萌生生长的草本
(蔗茅 *Erianthus rufipilus*)



通过反复萌生而在退化岩溶山地顽强生存的清香木 (*Pistacia weinmannifolia*)



团花新木姜子 (*Neolitsea homilantha*) 的侧根上克隆生长的三个分株



云南木樨榄 (*Olea yunnanensis*) 具有克隆特性的证据



云南木樨榄 (*Olea yunnanensis*) 具有克隆特性的证据

前言

喀斯特是世界上广泛分布的一类重要地貌类型。云南石林以其演化久远、类型丰富和观赏性强的喀斯特地貌享誉世界。壳斗科、樟科植物为主的半湿润常绿阔叶林占据该区域的石质和非石质地面，成为地带性的森林植被。感谢定居于此的彝族撒尼人的先辈们，是他们形成的撒尼文化中的“密枝神”信奉，使村庄周围供奉该神的溶丘上的半湿润常绿阔叶林（密枝林）得以留存至今，让我们仍然能窥见半湿润常绿阔叶林复杂的结构和多样性，并以其作为当地植被演替的重要参考和恢复的参照群落（Reference），为地带性森林的恢复服务。近代人口剧增下的不合理开发利用，使大量的喀斯特区域处于石山灌丛、灌草丛阶段，为深入认识半湿润常绿阔叶林次生演替提供了各种演替等级的植物群落。

全书分3篇11章。第一篇（1~4章）展示了石林地带性植被的群落学特征，重点论述了推动植物群落演替、更新的繁殖体库、种子输入、林下幼苗增补；第二篇（5~8章）展示了石林的植被变更历史、植被退化后的群落学特征、繁殖体库和土壤状况；第三篇（9~11章）展示了地带性植被次生演替过程中的繁殖体与生境限制，高阶演替阶段的植物繁殖体库对低阶演替阶段自然演替的推动，并就恢复实践提出建议。

喀斯特是与沙漠边缘一样脆弱的生态环境。人类活动的加剧，致使大量的喀斯特植被损毁、退化，形成了类似于荒漠化的景观，被冠以石漠化的名称，中国南方喀斯特区域尤为突出。有人将喀斯特石漠化比喻为“癌症”，可见其植被修复之困难。研究地带性的喀斯特森林植被，揭示其退化后的恢复演替动力，将为重新构建昔日的喀斯特森林提供重要的科技支撑。期望本书的研究结果，对石林、对滇中半湿润喀斯特区域，甚至更为广阔的喀斯特区域的地带性植被研究、修复与管理奠定科学基础。每隔4年联合国教科文组织将对其授予的每个世界地质公园（Global Geo-park）重新进行评估，评估结果作为是否保留地质公园的依据。2016年，石林世界地质公园将迎来第三次再评估（Revalidation），该书将作为重要的科研材料，支撑评估工作。

Preface

Karst is a wide distributed geological feature in our global terrestrial ecosystem. The piece of karst at Shilin County, Yunnan Province, P. R. China is famous for its long development history, diverse shapes and high level scenic values. Semi-humid evergreen broad-leaved forest (SEBF) dominated by Fagaceae, Lauraceae species had developed and had become zonal vegetation type at karst and non-rocky land surface of this area. Thank Shani people (one branch of Yi) inhabited in this area for their “Mizhi” God Belief in their indigenous culture, by which patches of SEBF had been survived at those karst hills hosting the God, then let us have possibility to view the structure and diversity of SEBF, and take it as reference community for zonal vegetation succession study and restoration purpose. The irrational forest land opening and usage activities after sharp human population increase in recent years, made some karst vegetation stay at bush, grass stages, and became a popular landscape. Those degraded vegetation types are model communities for secondary successional research of SEBF.

There are 3 parts, 11 chapters in this book. In part 1 (Chapter 1–4), we present the community study results of zonal vegetation of SEBF, giving focus on propagule bank that can drive succession and regeneration, seed input and seedlings recruitment. In part 2 (chapter 5–8), we present the vegetation changing history, community feature of composition, propagule bank and soil after degradation. In part 3 (chapter 9–11), we present the limitation of propagule and environment factors for secondary succession of zonal vegetation, effect of propagule bank from higher successional stage community on lower successional stage community, and then to give suggestions on zonal vegetation restoration.

Karst is as fragile as desert. With the increasing of human activities, karst vegetation was destroyed, degraded, thus the rock outcrops dominated the landscape as the desert area. The process and landscape was named “karst desertification (KD)”. KD was become a big environmental issue in southern China. KD is analogized as cancer, since revegetation is very diffi-

cult. Study on zonal vegetation successional, on its restoration forces after degradation can provide scientific base to restore forest similar to the old zonal ones. We hope those result showing in this book can bring lights to zonal vegetation research, restoration, management for Shilin, for other SEBF in central Yunnan Province, and as well as for other karst areas. United Nations Educational, Scientific and Cultural Organization (UNESCO) will revalidate each Geo-park around the world for every 4 years. The revalidation report composed by UNESCO experts will be an important indicator of qualification. Shilin Geo-part will be revalidated at 2016 again, and this book will be the key document of scientific research, to support the revalidation.

致谢

石林风景名胜区管理局高度重视石林地带性植被的研究及恢复工作，在他们的关怀、帮助和资金支持下，此书得以定稿并付诸出版，参与迎接石林世界地质公园接受联合国教科文组织的再评估（Revalidation），对管理局各级领导的关怀和资源处的参与表示衷心的感谢。

此书的大量研究数据得益于中国科学院西部之光项目《典型喀斯特退化山地植被恢复中的自然演替动力研究》，云南省重点基金项目《石林景区地带性植被景观恢复的生态学评价与景区栽培植被乡土化技术研究》（编号：2002C004）和中国科学院知识创新工程的资助。对参与获取本书数据的硕士研究生崔建武、俞筱押、马遵平、吴飞、赵春燕、唐樱殷、陈巧巧、周长宁等表示感谢，同时对主持云南省重点基金课题的李玉辉、刘文耀等给予的帮助表示感谢。

在对石林地带性植被的研究过程中，最使我难以忘怀的是已故的刘伦辉研究员，对他在植物分类上给予的帮助和指导表示衷心的感谢。感谢与我同单位的阎丽春对本书所使用的植物名进行的订正，并按照《Flora of China》（<http://www.efloras.org>）规范重新订正、编辑了附件中的种子植物名录。

对所有的，为此书的文稿撰写与编辑提供过帮助的众多人士表示感谢！

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