

研究论文

茂县土地岭植被恢复过程中物种多样性动态特征

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收稿日期 2005-7-30 修回日期 2006-2-5 网络版发布日期: 2006-4-25

摘要 植被恢复是退化生态系统重建的重要途径, 植被恢复过程物种多样性的变化反映了植被的恢复程度。通过群落调查和多样性分析, 研究了岷江上游土地岭植被恢复过程中群落物种多样性特征。结果表明: 恢复过程中6类不同类型群落分别表现其对于不同环境特征、干扰及更新方式等的响应; 森林是较灌丛更适合当地环境状况的植被类型; 人工恢复无干扰和轻度干扰群落的多样性相对较高, 是较好的恢复模式。重度干扰使得1年生植物与地下芽植物比例增加, 其它口食性较好的多年生草本减少。较强的干扰是群落无法更新、长期处于灌丛阶段且多样性较低的重要原因。本地区人工恢复群落在更新进程和多样性维持上优于自然更新群落, 种植华山松加速了本地区植被演替进程。建议以适合恢复区域的多种恢复配置方式进行造林, 并避免较强干扰, 可以加速群落演替进程并保持恢复群落较高的物种丰富度与多样性。

关键词 土地岭; 植被恢复; 物种多样性; 更新方式; 干扰强度

分类号 Q948, Q145

Dynamics of species diversity in vegetation restoration on Tudiling of Mao County, Southwest China

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Abstract The composition and species diversity in the process of vegetation restoration on Tudiling of Mao County in the upper reaches of Minjiang River were investigated through sampling method. 54 plots were selected based on the different regeneration styles(natural regeneration and artificial restoration)and disturbance intensity. The undisturbed, slightly disturbed, moderately disturbed and highly disturbed types were identified on the basis of canopy cover, disturbance traces and slope. A total of 242 plant species representing 148 genera and 61 families were recorded at all plots. Rosaceae, Compositae, Caprifoliaceae, Liliaceae and Ranunculaceae were the dominant families on Tudiling. By means of TWINSpan and disturbance identification, vegetation could be divided into 6 major types(2 natural communities and 4 artificial communities accounting for different anthropogenic disturbances, respectively). Obviously, differences in composition and species diversity of 6 communities reflected the adaptation to different anthropogenic disturbances and habitats respectively. Vegetation layers were more distinct and species diversity and evenness were higher in forest than in shrub communities. Species richness and Shannon-Wiener index in artificial communities markedly decreased as the intensity of disturbance increased. The decline of shrub layer richness and cover with disturbance intensity was higher than that of herb layer. Richness of species tolerant of heavy disturbance, such as annuals and geophytes, had increased, while the richness of large palatable species had decreased. Heavy disturbance resulted in low diversity and inhibited regeneration by decreasing tree species had saplings. The cover of upper layer had a negative effect on species richness and cover of low layer except highly disturbed and steep slope.

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open communities. Species diversity was higher in artificial undisturbed community than in natural undisturbed community, and slightly disturbed forest had the highest species diversity. In comparison with artificial undisturbed community on Lannigou, species diversity and richness were higher on Tudiling due to high diverse mixed species for restoration and *Pinus armandii* might trigger the process of vegetation succession by shortening regeneration time. Therefore, variation in species richness and species diversity is related to human interference and there is a need for conservation in the process of vegetation restoration. High diverse mixed species in restoration and avoiding strong disturbance in this region can accelerate succession and maintain high species richness and diversity.

Key words vegetation restoration; species diversity; regeneration style; disturbance intensity

DOI

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