

宝天曼落叶阔叶林样地栓皮栎种群空间格局

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Patterns of spatial distribution of *Quercus variabilis* in deciduous broadleaf forests in Baotianman Nature Reserve

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摘要

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摘要 种群空间格局分析有利于更好地理解格局形成的潜在生态过程。本研究在温带—亚热带过渡区的宝天曼自然保护区内选择两个1 ha固定监测样地, 以栓皮栎(*Quercus variabilis*)为研究对象, 采用单变量和双变量g(r)函数分析了两个典型样地中栓皮栎种群空间分布格局、4个不同生长阶段的空间分布格局和空间关联性, 以及栓皮栎活立木与残干间的空间关联性。结果表明: (1)栓皮栎种群分布格局以聚集为主, 样地I的聚集性更强, 而样地II则表现出较大的随机性; (2)在两个样地中, 早期阶段的个体均表现为聚集分布格局, 而后期阶段的个体则表现为随机分布格局; (3)样地I中栓皮栎种群不同生长阶段均表现为空间正相关, 样地II中栓皮栎种群的早期阶段与之后的两个阶段间均表现为空间负相关; (4)样地I中栓皮栎活立木与残干之间为空间正相互作用, 样地II中栓皮栎活立木与残干之间无空间关联性。宝天曼自然保护区栓皮栎种群空间分布格局可能受环境异质性的作用, 并对自身的天然更新产生影响。

关键词: 空间格局 *Quercus variabilis* 宝天曼自然保护区

Abstract: Point pattern analysis of species in a community is important in gaining a better understanding of the underlying ecological processes controlling the observed structure. In this paper, univariate and bivariate spatial point pattern analysis based on the pair-correlation function were used to evaluate the spatial patterns of *Quercus variabilis*. We compared the spatial patterns and associations of *Q. variabilis* at four different growth stages, and the relationships between standing trees and snags of *Q. variabilis* in two fully-mapped 1-ha forest plots in the Baotianman National Nature Reserve. We found that: (1) Aggregation was the main pattern type of *Q. variabilis* in the plots, with one plot showing stronger aggregation and the other exhibiting more randomness. (2) At different growth stages of *Q. variabilis* in the two plots, aggregation was found in younger stages and randomness in the older. (3) Positive interactions were found between the different growth stages of *Q. variabilis* in Plot I, and negative interactions in Plot II. (4) There are positive associations between standing trees and snags of *Q. variabilis* in Plot I, and spatial segregation in Plot II. Our study suggests that the spatial distribution of *Q. variabilis* may be influenced by environmental heterogeneity. This is important because the spatial distribution of this species in turn affects self regeneration of *Q. variabilis* populations in Baotianman National Nature Reserve.

Keywords: spatial pattern *Quercus variabilis* Baotianman National Nature Reserve

Received 2011-01-18; published 2011-03-20

Fund:

国家科技支撑计划专题

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引用本文:

袁志良, 王 婷, 朱学灵, 沙迎迎, 叶永忠. 宝天曼落叶阔叶林样地栓皮栎种群空间格局[J] 生物多样性, 2011, V19(02): 224-231

Zhiliang Yuan, Ting Wang, Xueling Zhu, Yingying Sha, Yongzhong Ye. Patterns of spatial distribution of *Quercus variabilis* in deciduous broadleaf forests in Baotianman Nature Reserve[J] Biodiversity Science, 2011, V19(02): 224-231

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