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自然保护与生态

南京老山国家森林公园朴树种群动态

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Dynamics of Celtis sinensis Population In Laoshan National Forest Park of Nanjing

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摘要 运用相邻格子法对南京老山国家森林公园朴树（Celtis sinensis）种群（以下简称"老山朴树种群"）进行野外调查，以定量方法研究其种群结构特征。编制种群动态生命表，并绘制存活曲线、死亡率曲线、消失率曲线和4个生存函数曲线，同时结合时间序列预测模型研究老山朴树种群的数量动态。结果表明，种群各龄级个体虽然存在波动，但整体成增长趋势，存活曲线Deevey II 型，分别在第I和第VII龄级出现2个死亡率高峰。第1个峰值的出现主要是由于种内竞争激烈，第2个峰值伴随种群进入生理死亡年龄而出现。生存分析结果表明，朴树种群至第VI龄级时，生存率仅为0.5%，累计死亡率高达99.5%；危险率曲线与死亡率和消失率曲线变化情况基本一致，反映朴树种群生长发育过程具有前期薄弱、中期稳定、后期衰退的特点。时间序列预测结果表明，在未来的2~6 a 内，老山朴树种群呈增长趋势。对幼苗及幼林进行人工抚育管理将有助于老山朴树种群天然更新。

关键词：朴树 生命表 存活曲线 时间序列分析

Abstract：A field survey was made on Celtis sinensis population in the Lasohan National Forest Park of Nanjing using a contiguous grid of quadrats to characterize quantitatively structure of Celtis sinensis population. A static life table of the population was worked out and a survival curve, a vanishing rate curve, a mortality rate curve and 4 survival function curves plotted out. Meanwhile dynamics of the population was predicted using the chronological prediction model. Results show that though fluctuation existed at various age classes of the population, on the whole, the population displayed a rising trend. Its survival curve fell into Deevey II type, which had two mortality peaks occurring at Age Class I and VII, separately. The occurrence of the first mortality peak was the result of strong intraspecies competition, while that of the second was of its entering the age of physiological death. Survival analysis show that its survival rate would only be 0.5% when it enters Age Class VI and its cumulative mortality rate would reach as high as 99.5%. Its hazard rate followed a curve similar to those of its vanishing rate and mortality rate. The findings reflect a general trend that the Celtis sinensis population is weak at the early age, grows stable in the mid-term, but declines in the old age stage. The chronological predition model for Celtis sinensis population predicts that the population will be increasing in the coming 2 − 6 years. Therefore, it is suggested that strengthening management of seedlings and young trees of Celtis sinensis should be conducive to natural renewal of the population.

Keywords：celtis sinensis life table survival curve chronological analysis

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