

生态过滤机制对吉林省西部农田防护林繁殖鸟类群落结构的影响

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摘要: 鸟类群落是农田生态系统的重要组成部分, 对鸟类群落结构的研究有助于为农田生物多样性保护提供理论参考。为揭示生态过滤机制对吉林省西部农田防护林繁殖鸟类群落结构的影响, 2022 及 2023 年每年 4 月及 6 月, 采用样点法对吉林省西部农田防护林繁殖鸟类群落进行调查, 同时记录样点周边农田防护林的环境变量, 利用联合物种分布模型(Joint species distribution models, JSDMs)分析环境因子及种间相互作用对鸟类群落的影响。研究共调查 167 个样点, 记录鸟类 17 目 36 科 65 种。结果表明, 吉林西部农田防护林繁殖期鸟类群落同时受到环境因子和种间相互作用的影响, 其中种间相互作用占据了主导地位。生态位重叠程度较高鸟类通过资源分割而降低种间竞争。联合物种分布模型的分析结果显示, 吉林省西部农田防护林内的繁殖鸟类分布较为集中, 觅食和繁殖环境较为相似, 不同物种间的相互作用影响物种分布模式, 进而对繁殖鸟类群落的组成产生影响。研究明确了生态过滤机制对吉林省西部农田防护林繁殖鸟类群落结构的影响, 为现有农田防护林的合理配置及优化提供了依据。

关键词: 繁殖鸟类群落; 生态过滤机制; 种间相互作用; 联合物种分布模型

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Effects of ecological filtering mechanism on the structure of breeding bird assemblages in agricultural protection forest in western Jilin Province

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Abstract: Bird assemblages are an important component of the field ecosystem, and research on the structure of bird assemblages can provide theoretical reference for the protection of biodiversity in field ecosystems. To reveal the impact of ecological filtering mechanism on the structure of bird assemblage in agricultural protection forest in western Jilin Province, in April and June of 2022 and 2023, point count method was used to conduct surveys of breeding bird assemblages, the environmental variables of farmland shelterbelts around the sample sites were recorded, and the joint species distribution model was used to analyze the effects of environmental factors and

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interspecific interactions on bird assemblages. A total of 167 sample sites were investigated, and 65 species of birds belonging to 36 families and 17 orders were recorded. The results showed that the breeding bird assemblages in agricultural protection forest in western Jilin Province was affected by both environmental factors and interspecific interactions, on which interspecific interactions dominated. Higher degree of niche overlap among birds led to resource partitioning and reduces interspecific competition. The analysis results of the joint species distribution model showed that the breeding birds in agricultural protection forest of western Jilin Province were distributed relatively concentratedly, with similar foraging and breeding environments. The interspecific interactions between different species affected the distribution patterns of species and subsequently influence the composition of the breeding bird assemblages. The study clarified the influence of ecological filtering mechanism on the structure of the breeding bird assemblages in agricultural protection forest in western Jilin Province and provided a basis for the rational allocation and optimization of the current protective forests.

Keywords: Breeding bird assemblages; Agricultural Protection Forest; Effects of ecological filtering mechanism; Joint species distribution models