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## Abstract

### **Study on Tree Species Diversity and Its Spatial Differences in Beijing City, China**

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#### **Abstract**

**Background and Aim:** Urban forests play a vital role in urban green infrastructure, impacting cultural, supporting, and regulating services. This study, conducted in Beijing, aims to analyze the species composition and diversity of urban forests within different rings of urbanization, namely the 2nd to 5th rings and suburban areas (S-U). The goal is to unveil the effects of the urbanization process on urban tree species diversity.

**Method:** The research area was divided into five zones, and the species diversity was compared. A total of 54 genera, 33 families, and 78 species were identified, with a focus on native and localized tree species. The study assessed the importance and utilization frequency of various tree species, highlighting the top 10 species with significant values. Additionally, the study explored ornamental function traits, such as leaf enjoyment, flowering, and evergreen characteristics, to understand the diversity within the urban forest.

**Results:** Results indicate a high homogeneity in the composition of greening tree species, with certain species like *Populus tomentosa*, *Sophora japonica*, and *Platanus* spp. showing higher importance values. The diversity of ornamental function traits reveals a dominance of species with leaf enjoyment, while flowering and evergreen species exhibit lower percentages. Spatial differences in tree species diversity were observed, with the highest diversity in the 5th ring (R5), followed by the 3rd ring (R3), and the lowest in suburban areas (S-U). Tree species evenness varied across the rings, with R2 and R5 showing lower evenness compared to R3, R4, and S-U.

**Conclusion:** This study provides insights into the urban tree species diversity in Beijing, emphasizing the importance of native and localized species. The spatial differences suggest varying impacts of urbanization on tree diversity, with long-established urban forests in R3 and richly diverse urban forests in R5 contributing to their respective evenness values. Understanding these patterns is crucial for sustainable urban forestry and biodiversity conservation.

**Keywords:** *Urban forest, Tree species composition, Ornamental traits, Diversity, Beijing*

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