

## Urban Park Characteristics Defining Avian Community Structure

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**Abstract :** Cities are an example of a human-modified environment with few fragments of urban green spaces, which are widely considered for urban biodiversity. The study aims to address the avifaunal diversity in urban parks based on the park size and their urbanization intensity. Also, understanding the key factors affecting species composition and structure as birds are a good indicator of a healthy ecosystem, and they are sensitive to changes in the environment. A 50 m-long line-transect method is used to survey birds in 39 urban parks in Delhi, India. Habitat variables, including vegetation (percentage of non-native trees, percentage of native trees, top canopy cover, sub-canopy cover, diameter at breast height, ground vegetation cover, shrub height) were measured using the quadrat method along the transect, and disturbance variables (distance from water, distance from road, distance from settlement, park area, visitor rate, and urbanization intensity) were measured using ArcGIS and google earth. We analyzed species data for diversity and richness. We explored the relation of species diversity and richness to habitat variables using the multi-model inference approach. Diversity and richness are found significant in different park sizes and their urbanization intensity. Medium size park supports more diversity, whereas large size park has more richness. However, diversity and richness both declined with increasing urbanization intensity. The result of CCA revealed that species composition in urban parks was positively associated with tree diameter at breast height and distance from the settlement. On the model selection approach, disturbance variables, especially distance from road, urbanization intensity, and visitors are the best predictors for the species richness of birds in urban parks. In comparison, multiple regression analysis between habitat variables and bird diversity suggested that native tree species in the park may explain the diversity pattern of birds in urban parks. Feeding guilds such as insectivores, omnivores, carnivores, granivores, and frugivores showed a significant relation with vegetation variables, while carnivores and scavenger bird species mainly responded with disturbance variables. The study highlights the importance of park size in urban areas and their urbanization intensity. It also indicates that distance from the settlement, distance from the road, urbanization intensity, visitors, diameter at breast height, and native tree species can be important determining factors for bird richness and diversity in urban parks. The study also concludes that the response of feeding guilds to vegetation and disturbance in urban parks varies. Therefore, we recommend that park size and surrounding urban matrix should be considered in order to increase bird diversity and richness in urban areas for designing and planning.

**Keywords :** diversity, feeding guild, urban park, urbanization intensity

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