
Effects of local habitat characteristics and landscape context on grassland and wasteland use by birds in and around cities.

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Résumé

Urbanisation is a major cause of biodiversity loss but careful habitat management and provision of green space within cities can help to mitigate its negative effects. Grasslands including wastelands occupy large surface areas and are associated with a range of functions (sports grounds, parks, roadsides, roundabouts...). Only a few studies have begun to explore how birds exploit urban grasslands and wastelands and to question why certain species typical of grassland habitats tend not to penetrate urban landscapes. We hypothesized that the value of grasslands for nesting and feeding birds is likely to depend both on landscape context i.e. the quantity and spatial arrangement of land cover types (grasslands, woodlands, built-up land) or of land-use types (private gardens) in the neighbourhood and on local characteristics (grassland use, vegetation structure and composition, grass management). Our aims were 1) to examine the relative influence of local and landscape variables on bird species richness and abundance and 2) to determine specifically whether use of grasslands for ground foraging varied along the urban-rural gradient. We selected 48 sites distributed along an urban-rural gradient in two French cities, in order to maximise variation in the proportions of grassland, built-up land and private gardens in the neighbouring landscape. At each site we sampled local habitat characteristics, bird presence and abundance and bird foraging activity in grass. In a subset of 21 sites, grass height measurements were made. Species richness was influenced by local rather than landscape variables; sites with scrub within the grassland and higher hedgerow vegetation were more species rich. Total bird abundance, however, depended on landscape context; birds were more numerous in grasslands with a high proportion of gardens in the landscape, which tended to be in areas with intermediate levels of built-up land. Bird foraging in grasslands was also greater in urban grasslands and was explained by differences in both grassland use and management at local scale as well as by landscape context. Shorter, regularly mown, recreational grasslands were more common in urban contexts and favoured by species requiring easily accessible and visible invertebrate prey, which also preferred landscapes with less woody vegetation. Wastelands in urban areas, but also recreational areas with longer grass, favoured seed-eating species, while rural, agricultural grasslands were much less used by ground foraging birds. Such knowledge of the interplay between landscape and local factors influencing bird use of grasslands and wastelands could help land planners and conservationists interested in optimising the quantity, quality and spatial configuration of semi-natural habitats in and around cities to suit biodiversity objectives.

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