

Effects of Urbanization and Season on Avian Food Preferences

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Urbanization is rapidly transforming natural habitats into human-dominated landscapes that fragment native ecosystems, reduce green spaces, and expose wildlife to novel environments and anthropogenic food waste. For birds, this may lead to greater consumption of calorie-rich but nutrient-poor foods, altered foraging behavior, and increased interactions with humans and urban infrastructure. We conducted a pilot study in 2021 that showed species differences in food preference (bread v seeds) and boldness of birds in an urban yard. This study examined food preferences of birds in urban and rural environments through a controlled feeding experiment in which birds were offered a choice of white bread, ground dog food, or wild birdseed. The number of individual birds observed consuming each food type was recorded at 30-minute intervals over a 3-hour period during both summer and fall. Urbanization level was quantified European Space Agency satellite imagery, with built-environment identified as red pixels, which we quantified using NIH ImageJ software. Birds in rural environments did not consume dog food during either season and consumed bread only during the summer. Latency to first food consumed did not differ between seasons or environments. In urban environments, Great-tailed grackles and Rock pigeons were consistently bolder than other species and were most often the first to approach the study foods. Fewer birds were observed in rural study sites in the fall with only one mourning dove selecting seeds, whereas rural summer sites exhibited greater species diversity consuming of birds consuming bread and seeds. Moreover, a greater diversity and number of birds consumed bread and seeds in the urban environments in both seasons. Dog food consumption was largely restricted to Rock pigeons and Great-tailed grackles, with occasional Mallard ducks in the fall. In the summer, however, dog food was consumed mainly by a broader range of species including Rock doves, Great-tailed grackles, White-winged doves as well as a Mourning dove, European collared dove, Northern mockingbird, Canadian Goose, and House sparrow. These findings suggest that urban environments promote dietary flexibility and increased use of anthropogenic food resources by birds, with potential implications for avian health and urban ecosystem dynamics.