Bird species that do well in urban areas are more colorful and less brown, study finds

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The Blue-faced Honeyeater (Entomyzon cyanotis) successfully colonized urban areas in Australia. Like many urban-dwelling bird species, it is characterized by conspicuous plumage colouration. Credit: MPI for Biological Intelligence / Kaspar Delhey

Researchers at the University of Granada and the Max Planck Institute

for Biological Intelligence have demonstrated a link between urbanization and the plumage color of birds. Species that thrive in cities are less brown and sport more elaborate colors. These color differences are probably due to differences in habitat structure and predation pressure—cities are less forested, have different background colors and a lower number of avian predator species.

The study, published in *Ecology Letters*, includes information from more than 1,200 bird species and represents a clear example of the impact of urbanization on wildlife.

Urbanization has a huge impact on the ecosystem and poses enormous challenges to animals and plants. The ongoing, worldwide increase in urbanization is considered one of the main causes of the steady decline in biodiversity.

Urban ecology is the field of research that focuses on the effects of urbanization on different organisms. For example, many studies have investigated how urban noise affects communication in birds. However, little is still known about the relationship between urbanization and plumage color in birds.

Plumage color serves many important functions: It can play a role in keeping an animal warm or avoiding overheating (thermoregulation), in camouflage, in competitive interactions, or in mate choice. Cities tend to be warmer, have fewer predators, more artificial light and novel background colors like that of concrete and asphalt. It is therefore quite conceivable that the urban environment can affect the color of animals.

Led by Bart Kempenaers, researchers at the MPI for Biological Intelligence and the University of Granada wanted to get to the bottom of this issue. They used a global dataset on the abundance of over 1,200 bird species in habitats with different levels of urbanization and

combined it with data on plumage color. The team then analyzed the extent to which plumage color could predict the relative abundance of the species in urban areas.

Brown-coloured forest birds, such as the White-throated Treecreeper (Cormobates leucophaeus) shown here, usually have a hard time in urban areas. Credit: MPI for Biological Intelligence / Kaspar Delhey

The study showed that species that thrive in urban areas are less frequently brown.

"Brown shades are more common in natural environments than in cities. We suspect that brown birds are at a disadvantage in a rather gray city.

The predominant colors of a city and the lack of suitable habitats can therefore determine which bird species are successful there," explains Kaspar Delhey, one of the two lead authors of the study.

In addition, successful urban bird species have more elaborate colors in their plumage, which is especially true for females. Cities seem to favor more colorful birds—probably because there are fewer predators in urban areas and "being seen" poses a lower risk than in rural areas.

Previous studies suggested that color diversity is lower in urban bird communities, but the team showed that the opposite is true.

"There are fewer species in urban areas than in rural areas. When we take this into account, the bird communities in cities actually have greater color diversity," says Juan Diego Ibáñez-Álamo, first author of the study.

The study clearly shows that successful urban birds differ in color from those that fail to thrive in the city—urbanization and bird coloration are therefore linked. Future research will need to show whether this also holds true for other animal groups.

More information: Juan Diego Ibáñez-Álamo et al, Colourful Urban Birds: Bird Species Successful in Urban Environments Have More Elaborate Colours and Less Brown, *Ecology Letters* (2025). DOI: 10.1111/ele.70106

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