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Study Suggests City Songbirds Shift Pitch for Skyscrapers

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Research suggest that great tits increase song pitch in the city because of its architecture. (Photo: Steven Fruitsmaak, Wikimedia Commons)

Urban environments are home to a plethora of birds: Our own Michele Wilson Berger [1] wouldn't be able to keep up with Bird-A-Day [2] in Manhattan without them. From the rock dove begging for crumbs to the library nests of red-tailed hawks [3], many city birds adapt to their urban environment. Scientists believe that some urban songbirds—including sparrows, blackbirds, and the great tit—sing at a higher pitch to escape low-frequency city noise, but a new study [4] suggests birds alter their song to account for the physical structure of the urban jungle, too.

Researchers at the University of Copenhagen and Aberystwyth University suggest that architecture, in addition to honking cars and bustling sidewalks, plays an important role in determining how birds sing.

"We suggest that the structure of the acoustic environment, in addition to the background noise, plays an important role in signal adaptation," explains the abstract of the study, published in the December issue of *PLoS One*.

Variations in city structures, including alleys and taller buildings, reflect and distort noise in different ways that birds must account for during their singing. As a result of the differences in sound obstruction in the city and forest, birds in these habitats vary their song, according to the study.

Emily Mockford and Rupert Marshall from London's Aberystwyth University, along with Torben Dabelsteen from the University of Copenhagen, recorded rural and urban great tit songs and played them back in both habitats.

"[We] re-recorded the songs and analyzed them to compare how well urban and rural songs transmitted in the two habitats," explains Dabelsteen over email.

When trying to transmit rural great tit songs in an urban environment, the transmission efficiency was significantly lower. In addition, urban great tit songs were transmitted effectively without traffic noise—a part of city life most scientists used to explain urban songbirds' increased pitch.

"Our study has demonstrated that urban song also transmit most effectively in urban habitats when there is no traffic noise thus suggesting that the special surroundings with many large reflecting surfaces may play a role in how urban birds 'design' their songs," says Dabelsteen.

Dabelsteen says the suggested urban adaptations to pitch aren't necessarily caused by natural selection, but the birds may have learned from their predecessors to increase their songs' pitch.

If you're in a city and want to check out this effect yourself, here are some common urban songbirds, from The Cornell Lab of Ornithology's Celebrate Urban Birds Project [5]:

- -American Robin [6]
- -Baltimore Oriole (east) [7]
- -Barn Swallow [8]
- -Brown-headed Cowbird [9]
- -Bullock's Oriole (west) [10]
- -Cedar Waxwing [11]
- -European Starling [12]
- -House Finch [13]
- -House Sparrow [14]

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var gaJsHost = (("https:" == document.location.protocol) ? "https://ssl." : "http://www.");
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[1] http://magblog.audubon.org/blogger/michele-wilson-berger
[2] http://magblog.audubon.org/bird-day-challenge-begins-new-years-day-2012
[3] http://magblog.audubon.org/nest-cam-spotlight-red-tailed-hawks-nyc
[4] http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0028242
[5] http://www.birds.cornell.edu/celebration/birds/bird-guide/celebrate-urban-birds-bird-guide
[6] http://www.birds.cornell.edu/celebration/birds/bird-guide/american-robin
[7] http://www.birds.cornell.edu/celebration/birds/bird-guide/baltimore-oriole
[8] http://www.birds.cornell.edu/celebration/birds/bird-guide/barn-swallow
[9] http://www.birds.cornell.edu/celebration/birds/bird-guide/brown-headed-cowbird
[10] http://www.birds.cornell.edu/celebration/birds/bird-guide/bullock-s-oriole-west
[11] http://www.birds.cornell.edu/celebration/birds/bird-guide/cedar-waxwing
[12] http://www.birds.cornell.edu/celebration/birds/bird-guide/european-starling
[13] http://www.birds.cornell.edu/celebration/birds/bird-guide/house-finch
[14] http://www.birds.cornell.edu/celebration/birds/bird-guide/house-sparrow