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Previous stories pertaining to Professor Rodewald's research:

"Farming Inside Forests Hurts Bird Communities More Than Timber Harvesting, Study Suggests," 4/10/02.

SOME MIGRATORY BIRDS CAN'T FIND SUCCESS IN URBAN AREAS, STUDY FINDS

COLUMBUS, Ohio – New research finds fresh evidence that urbanization in the United States threatens the populations of some species of migratory birds.

But the six-year study also refutes one of the most widely accepted explanations of why urban areas are so hostile to some kinds of birds.

Most ecologists have assumed that common nest predators in urban areas – such as house cats and raccoons – were destroying eggs or killing young birds in greater numbers than in rural areas, said Amanda Rodewald, co-author of the study and associate professor of wildlife ecology at Ohio State University's School of Environment and Natural Resources.

But this study was one of the first to actually test that assumption by monitoring natural nests over several years. And the results showed that predators weren't the main problem: instead, the birds just didn't seem to like urban areas and gave up more easily.

Urban areas attracted lower-quality birds which, compared to those in rural areas, arrived later in the spring, left earlier in the fall, made fewer nesting attempts and were much less likely to return to nesting spots from year to year.

"So much of the world is becoming urbanized," she said. "From a conservation perspective, really understanding how animals respond to urbanization is going to be important for protecting biodiversity."

"There is something about these urban forests that strikes the birds as unsuitable," Rodewald said. "Even when they try nesting, they are less likely to renest after failure or to return in subsequent years."

Rodewald conducted the study with Daniel Shustack, a graduate student in wildlife ecology at Ohio State. Their findings were published in a recent issue of the *Journal of Animal Ecology*.

The researchers monitored the nesting success in the Columbus area of Acadian Flycatchers, a migratory bird that is a relatively common summer resident in wooded areas across much of the eastern United States. It winters in Central and South America.

The study involved six years of monitoring 387 nests and 167 breeding pairs of Acadian Flycatchers who lived in 35 forest stands in and around Columbus.

The researchers found striking differences in the number of young produced by flycatchers depending on how urban their nesting sites were. Non-urban sites averaged nearly two young produced each nesting season, while urban nests averaged about one young per year.

Nest survival ranged widely across sites, with 11 to 55 percent of nests successfully raising young. Nest survival, however, was not related to urbanization.

The researchers determined how urban a nest site was by measuring the percentage of land within a 1 kilometer radius that was covered by a building, parking lot, mowed lawn or other man-made surface.

As other research has suggested, this study did find that urban areas had more predators, such as raccoons, when compared to rural areas. But these predators were not raiding nests more often in urban areas, Rodewald said.

So what was reducing the number of young produced?

One problem may be that the adults birds who nested in urban areas tended to be slightly smaller – although not greatly so -- than those in rural areas.

"The birds are sorting out, and it appears the lower-quality birds are the ones forced into urban areas," Rodewald said. "That means they have no other options – there are not better rural areas for them to go."

The study showed that birds in urban areas started their nests later, already putting them at a disadvantage in the relatively short nesting season.

In rural areas, if a nest failed for some reason early in the season, the flycatchers would often make a second nesting attempt. But in urban areas, the flycatchers would often give up if their first nest in a year wasn't successful.

While many rural birds returned to the same nest site year after year, nest site turnover in urban areas was about two times higher than of those outside the city.

What is it about urban areas that Acadian Flycatchers – and other migratory birds like them – don't like? Unfortunately, that is not easy to determine, Rodewald said.

"Is it the noise, the amount of artificial lights at night, the local vegetation? We just don't know," she said.

However, researchers are testing several theories.

For one, many of the urban forests were dominated by Amur Honeysuckle plants, an invasive shrub native to Asia that is often used as ornamental plants in urban areas. Honeysuckles often made the understory of urban forests thicker than those in rural areas, which Acadians may not like for some reason.

Rodewald said she and her colleagues are removing the plants in some forests to see if that helps Acadian Flycatchers in those areas.

The researchers are also investigating the role of Brown-headed Cowbirds, a species of birds that lays it eggs in the nests of other birds, including the Acadian Flycatcher. The cowbird fledglings are fed by the host birds, often at the expense of their own young.

This study found that urban flycatcher nests were parasitized by cowbirds more often than nests in rural areas, and a new study hopes to find out why.

The findings suggest that conservation of birds in urban areas may be more complex than many ecologists assumed.

"If it was just nest predation that was threatening Acadians, than we would know what to do," Rodewald said. "But this suggests we need to get a handle on how birds like Acadian Flycatchers perceive these urban habitats. We need to know what they don't like about urban areas before we can determine what to do."

And the problem isn't just with one species of bird, she said.

"So much of the world is becoming urbanized," she said. "From a conservation perspective, really understanding how animals respond to urbanization is going to be important for protecting biodiversity."

The study was funded by the National Science Foundation and the Ohio Division of Wildlife.

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