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Feeding birds could change their evolution

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Courtesy Cell Press
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Feeding birds in winter is innocent fun, but it can have profound—and relatively quick—effects on the evolutionary future of a species, researchers say.

A report published online in the Dec. 3 issue of the research journal *Current Biology* argues that a population of birds known as blackcaps has split into two “reproductively isolated” groups in under 30 generations, despite continuing to breed in the same forests. In other words, the groups aren’t breeding with each other, setting the stage for them to evolve differently in the future.



Feeding birds in winter is innocent fun, but it can nonetheless have profound—and relatively quick—effects on the evolutionary future of a species, researchers say. Above, a male blackcap *Sylvia atricapilla*. (Photo courtesy Michael Apel; distributed under the [GNU Free Documentation License](#))

The reproductive isolation between these populations is now stronger than that of other blackcaps that are always separated from one another by distances of 800 kilometers (500 miles) or more, the scientists said.

“Our study documents the profound impact of human activities on the evolutionary trajectories of

species,” said Martin Schaefer of the University of Freiburg. “It shows that we are influencing the fate not only of rare and endangered species, but also of the common ones that surround our daily lives.”

The split that the researchers observed followed the recent establishment of a migratory divide between southwest- and northwest-migrating blackcap (*Sylvia atricapilla*) populations in Central Europe after humans began offering food to them in the winter.

The two groups began to follow distinct migratory routes—wintering in Spain and the United Kingdom—and faced distinct pressures. Under these, the two groups have since become locally adapted “ecotypes,” the researchers argued. Ecotypes are supposed to represent the initial step of differentiation among populations of the same species; if ecotypes continue down that path, they can ultimately become separate species.

“The new northwest migratory route is shorter, and those birds feed on food provided by humans instead of fruits as the birds that migrate southwest do,” Schaefer said. “As a consequence, birds migrating northwest have rounder wings, which provide better maneuverability but make them less suited for long-distance migration.” They also have longer, narrower bills that are less equipped for eating large fruits like olives during the winter.

Schaefer said it isn’t clear whether the ecotypes will ever become separate species; in fact, he doubts they will because the habits of humans will tend to change over time. Even so, he said, the findings speak to a long-standing debate about whether geographic separation is necessary for speciation to occur. In particular, it had been contentious whether selection could act strongly and consistently enough to separate a united gene pool that is not divided by physical barriers.

“In highly mobile organisms such as birds, the consensus is that” this is “extremely rare, mainly because it is difficult to envisage how gene pools could be kept separate” long enough, Schaefer said. “Our results now show that the initial steps of speciation can occur very quickly in a highly mobile, migratory bird,” and “it doesn’t have to take millions of years.”

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