

# By feeding the birds, you could change their evolutionary fate

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*Sylvia atricapilla* (Blackcap). Photo by Jakub Stančo, via Wikipedia.

Feeding birds in winter is a most innocent human activity, but it can nonetheless have profound effects on the evolutionary future of a species, and those changes can be seen in the very near term. That's the conclusion of a report published online on December 3rd in *Current Biology*, a Cell Press publication, showing that what was once a single population of birds known as blackcaps has been split into two reproductively isolated groups in fewer than 30 generations, despite the fact that they continue to breed side by side in the very same forests.

The [reproductive isolation](#) between these populations, which live together for part of the year, is now stronger than that of other blackcaps

that are always separated from one another by distances of 800 kilometers or more, the researchers 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 selective pressures. Under that pressure, the two groups have since become locally adapted ecotypes. (Ecotypes represent the initial step of differentiation among populations of the same species, the researchers explained. 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 says 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, the findings do speak to the 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 in sympatry to separate a united gene pool.

"In highly mobile organisms such as [birds](#), the consensus is that sympatric speciation is extremely rare, mainly because it is difficult to envisage how gene pools could be kept separate until speciation has occurred," Schaefer said. "Our results now show that the initial steps of speciation can occur very quickly in a highly mobile, migratory bird," because divergent selection during the overwintering phase leads to the evolution of reproductive isolation.

"This is a nice example of the speed of evolution," he added. "It is something that we can see with our own eyes if we only look closely enough. It doesn't have to take millions of years."

Source: Cell Press

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