

Study fuels debate about why female birds seek extra mates

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When female birds mate with males other than their social partners and have broods of mixed paternity, the offspring sired by these "extra-pair" fathers may often get a head start in life, according to a new report published online on April 30th in *Current Biology*, a Cell Press publication. The discovery adds fuel to the debate about why some female birds seek those extra mates in the first place.

"A diverse range of explanations have been proposed to account for female participation in extra-pair copulations," said Michael Magrath of University of Groningen, The Netherlands. "The explanations that have received most attention suggest that females stand to gain genetically superior [offspring](#) by having their eggs fertilized by males that are of higher genetic quality or that are genetically more compatible."

Perhaps the most convincing evidence for this idea comes from the numerous studies reporting the superior performance of offspring sired by extra-pair males over their half-siblings sired by the social partner.

But the new findings in blue tits suggest that the superiority of extra-pair offspring might have little to do with their genes. They found that eggs fertilized by males other than the mating partner tend to be laid and to hatch earlier. Indeed, they report, nearly 75 percent of extra-pair offspring were produced in the first half of the clutch.

"Generally, earlier hatching chicks perform better than their later hatching siblings because they gain an initial size advantage, giving them

the edge in competition for food during the nestling period," Magrath said. "After correcting for the effects of hatching time, we found that the differences between extra-pair offspring and their within-pair half-sibs were reduced or absent, indicating that non-genetic laying order effects largely accounted for the observed superiority of extra-pair offspring."

Magrath said they still don't know why there would be a connection between paternity and hatching order. But the result may nonetheless lend support to alternative explanations for the birds' promiscuous behavior.

And plenty of ideas have been put forth. Females may elect to mate with extra-pair males to guard against the possibility that their social partner is infertile. They might also engage in sex with other males primarily to avoid being harassed by them. In other words, it might simply be easier and less risky just to give in.

Although the new findings don't rule out any of the possibilities, the researchers said they are "perhaps most consistent with the fertility insurance hypothesis," which predicts that females should seek extra-pair copulations before laying starts so that all eggs could still be fertilized in the event of pair-male infertility.

"Because birds can store sperm for an extended period in specialized storage tubules, females may have little need to continue engaging in extra-pair copulation after laying starts, and this would rather neatly explain the decline in extra-pair offspring that we observed with laying order," Magrath said.

Alternatively, he added, if extra-pair young are indeed genetically superior, placing them early in the laying order may be the mother's strategy to promote their chances of survival through the most risky

period of their life.

Source: Cell Press ([news](#) : [web](#))

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