

Older male sparrows seem to father more chicks by getting more sperm to the egg

September 27 2019, by Hayley Dunning



A Lundy Island sparrow. Credit: Leticia Lopera-Doblas

Researchers are a step closer to solving the puzzle of why older male sparrows are more successful at mating and producing chicks.

Older male sparrows appear to father more chicks than their younger counterparts when their female mates are monogamously 'attached' to another male.

This, according to new Imperial College London research, appears to be because older [males](#) manage to get more sperm to female [eggs](#), which increases the chance of fertilization.

The finding goes some way to answering the question of why older males are more successful than younger ones in sex occurring outside of monogamous relationships, known as 'extra-pair' matings.

Lead researcher Dr. Antje Girndt, from the Department of Life Sciences at Imperial, said: "Older males are known to father more 'illegitimate' children, but exactly how has remained a mystery. It might be because they are considered more genetically fit, as they have proven their ability to survive longer— but older sparrows were also thought to produce lower quality sperm as they age.

"Our new study goes a long way to solving this paradox, showing older males' sperm might be able to outcompete their younger rivals."

Not based on behavior

Sparrows are socially monogamous but sexually promiscuous, staying with one partner for the security of raising chicks, but with the males not necessarily raising their own chicks.

The research team had previously tested if certain behaviors were responsible for older fathers siring more extra-pair chicks.



A Lundy Island sparrow, where the team studied a wild sparrow population.
Credit: Alfredo Sanchez-Tojar

These included the "male manipulation" hypothesis—that older males are better at coercing females into "cheating," and the "female choice" hypothesis—that females solicit more sex from older males than from younger males.

However, when these hypotheses were put to the test with both captive and wild [sparrow](#) populations, neither proved to be the reason older

males are more successful.

For the new study, published today in the *Journal of Evolutionary Biology*, the researchers instead investigated mechanisms that occur after sparrows had decided to mate outside their partnership, by looking at the sperm of both captive and wild sparrows of all ages.

Sperm differences

Many animals produce lower quality sperm as they age, so the researchers expected there may be a trade-off—for example that the older sparrows produced more sperm to make up for poorer quality.

However, they found no significant differences in sperm shape and size for the older males compared to younger ones, and both produced around the same volume of sperm.

They did find that the sperm from older males reached the female egg in greater numbers, as measured by the number of sperm embedded in the outer layers of the egg.

While the initial numbers of sperm produced by older and younger males may have been the same, as much as three times the amount of sperm from older sparrows reached the egg than that of younger sparrows.

This tactic does, however, come with risks: if more than one [sperm](#) enters the same egg and fuses with the female's nucleus, the resulting embryo will not be viable and will die.

The researchers hope further research will untangle the relationship between older males and chicks, and whether there is a cost to females of older males being more successful.

"Male age and its association with reproductive traits in captive and wild house sparrows" is published in the *Journal of Evolutionary Biology*.

More information: Antje Girndt et al. Male age and its association with reproductive traits in captive and wild house sparrows, *Journal of Evolutionary Biology* (2019). [DOI: 10.1111/jeb.13542](https://doi.org/10.1111/jeb.13542)

Provided by Imperial College London

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