Smart father, smarter chick

A new study suggests female mountain chickadees will cheat on their mates if a more intelligent male comes along. **Annie Roth** reports

A study, published in the journal *eLife*, has found that female mountain chickadees proactively seek out males that have better cognitive skills than others. The researchers behind this study say acts of chickadee cheating improve the likelihood of successful reproduction, as chicks sired by "smarter" fathers are more likely to survive.

Mountain chickadees, small songbirds found in Western North America, were long thought to be monogamous, but recent genetic studies have brought that belief into question. "Birds were always held up as the epitome of monogamy, and then genetics was like 'just kidding'," said Carrie Branch, an assistant professor at Western University in Ontario, Canada, and lead author of the study.

While it's true that mountain chickadees breed and raise their young with the same mate year after year, scientists have found that nests are often full of half-siblings, suggesting that both males and females may be stepping outside of their pairs.

When Branch was in graduate school, she saw evidence that female mountain chickadees that lived at both high and low elevations preferred high-elevation males, which are known to be better at remembering where their food caches are.

Mountain chickadees spend the summer and fall storing food in caches across their territory. When winter comes around, these reserves become their primary source of food; thus, the ability to remember where those spots are becomes critical to their survival.

That females from low elevations showed interest in high-elevation males made Branch wonder whether female mountain chickadees were attracted to intelligence.

Across the animal kingdom,

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there are many traits that females find attractive, such as strength, size and the ability to sing on key, but rarely is smarts a turn-on. In 2018, Branch set out to learn if a desire for strong cognitive abilities was driving chickadees to cheat.

Branch and her colleagues installed a series of "smart" feeders throughout California's Sierra Nevada range and attached coloured bands to the legs of chickadees. Each feeder was programmed to dispense food only to birds wearing a specific coloured leg band. This way, each bird would have to remember which feeder could be counted on for food.

For three years, the researchers measured the ability of the birds to remember. They also used DNA testing to identify which ones were breeding, both within and outside of their matings.

The researchers found that around one-third of the chicks born during those three years were the product of infidelity, with 70 per cent of nests having at least one chick whose father was different from that of its siblings.

And while both smart and less smart males contributed to these mixed paternity families, it was the males the researchers deemed smart that sired more young. The males who performed best in the researcher's cognition tests sired between six and seven chicks outside of the matings each year.

When Branch realised what these chickadees were up to, she was surprised. She said. "It is really convincing evidence that these females are seeking good genes for their offspring."

In some cases, the behaviour could exist to make up for a female's own lack of such genes. The researchers also discovered that females who had trouble remembering their designated feeder were more likely to have mixed paternity families.

How these females know which males have the best brains remains a mystery, but the researchers have a few hunches, one of which is that females don't cheat with strangers, but rather with birds they know well.

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