Why sticking around is sometimes the better choice for males

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Burying beetles, unlike humans, stop caring for young when females mate with other males because this happens frequently and providing care reduces their survival. Credit: Per Smiseth

Researchers from Lund University and the University of Oxford have been able to provide one answer as to why males in many species still provide paternal care, even when their offspring may not belong to them. The study finds that, when the conditions are right, sticking around despite being 'cuckolded' actually turns out to be the most successful

evolutionary strategy. The study, by Charlie Cornwallis and colleagues, is published 26 March in the open access journal *PLOS Biology*.

In many species, males put a lot of effort into caring for offspring that are not their own. At first glance this makes little sense, because natural selection should dictate that males only care for the offspring that carry their genes. However, this study suggests that the males are both more tolerant and more astute than previously assumed, and in fact adjust their care according to how likely it is that females are unfaithful, whilst also judging whether caring will potentially reduce the number of offspring they can have in the future.

The researchers conducted a meta-analysis of 62 studies across 48 different species including insects, fish, birds and mammals. Overall, the researchers found that promiscuous copulations by females reduced the investment of males by 12%. Although parental care is highly variable across these species, the researchers were able to find a general explanation for why sticking around to care for the offspring is the better choice for some males that have been usurped. The reason is that males tend to be more accepting of offspring fathered by other males in species where the risk of cuckoldry is generally low, or when caring does not harm their future reproductive success.

"This, to me, shows the strength of natural selection, with its footprints clear in species from burying beetles—which care for young over a few weeks by regurgitating dead mice—to humans, who spend years providing for their children", says Charlie Cornwallis, researcher at the Department of Biology, Lund University. "These are complex calculations that males are making," he adds, "and it has been difficult to measure the relevant factors correctly, but looking across species has helped us work out what is going on. Moreover, a comparative study like this can guide researchers to the types of species and experimental cues that are likely to provide the most insight into paternal care in the

future."

The study therefore opens up the possibility of more targeted research in the area. Now that the researchers know what factors are important, they can design studies to further test their findings and predict what males will do in species that have not yet been studied. For example, in species where the cost of caring is very low, males would not be expected to adjust their level of parental care even if the females are promiscuous. Rather than these males being 'duped', such tolerance has actually been favoured by natural selection.

More information: Griffin AS, Alonzo SH, Cornwallis CK (2013) Why Do Cuckolded Males Provide Paternal Care? PLoS Biol 11(3): e1001520. doi:10.1371/journal.pbio.1001520
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