



THE FATHER ENIGMA

Nature contains some truly devoted dads but why should fathers care at all, wonders
Lesley Evans Ogden

IMAGINE spending four months upside down, half starved, babysitting a brood of tiny eggs under a leaf. Parenting is tough for daddy longlegs living in the Brazilian Atlantic forest, but their efforts aren't in vain. Having a parent to watch over the eggs makes a huge difference to their survival; without one, a third of clutches are eaten.

Although we humans no longer need to protect our progeny from hungry predators, we are accustomed to thinking that parenting is crucial if offspring are to survive and thrive. Yet, among the myriad organisms on our planet, this is rare. What's more, in those species that do care for their young there is a strong bias towards females doing all the work. That makes the daddy longlegs a real oddity – it is among the few examples where males alone raise the young.

When it comes to parenting, why do some males buck the trend and take the lion's share? This question has puzzled scientists from Charles Darwin onwards. They have come up with some ingenious theories, but as we have learned more about nature's devoted dads, several have fallen by the wayside. We do know that male parental care has evolved independently many times, in a diverse array of animals. Interestingly, exclusive care by

dads is clustered in some branches of life's evolutionary tree, including certain fish and frogs. Each species may have its own story, but the example of the daddy longlegs highlights a surprising common thread. While babysitting, daddy longlegs fathers can receive the amorous attentions – and eggs – of up to 20 females and, hidden away from danger, their chance of survival is high. In other words, childcare isn't just a chore for doting dads: it has its perks.

The idea that most parenting falls to mothers was self-evident to Darwin. He was perplexed by species in which males cared for the kids. In *The Descent of Man, and Selection in Relation to Sex* (1871) he writes that the male emu, "not only performs the whole duty of incubation, but has to defend the young from their mother". He provides the amusing, if dated, anthropomorphic comment that in emus, "we have a complete reversal not only of the parental and incubating instincts, but of the usual moral qualities of the two sexes;

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the females being savage, quarrelsome, and noisy, the males gentle and good". Darwin also noted that among species where males care for offspring, females often actively seek out mates, reversing the typical pattern of males fighting for females. Building on this observation, he proposed two explanations for such behaviour. Males may have "lost their ardour, so that they no longer search eagerly for their females", putting their efforts into raising their offspring instead. Alternatively, "females have become much more numerous than the males...[so that] it is not improbable that the females would have been led to court the males, instead of being courted by them".

Darwin's line of thinking, invoking sexual selection rather than natural selection, carried through right up until the 1980s. One man who went against the grain, however, was evolutionary biologist Robert Trivers. In 1972, while at Harvard University, he proposed that parenting practices are underpinned by a basic physiological difference in most species – unequal gamete size. The energetic costs of producing large eggs versus tiny sperm means that from the outset females have invested more in offspring, and caring for young helps them protect that investment. ➤

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