

'Stingy' males looking for sex unpopular with females, says insect study

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Mexican true katydids (bushcrickets) mating.

(Phys.org) —When it comes to the insect world, males who expect sex - without first bothering to 'wine and dine' their partner - are likely to get a good kicking from angry females, says a new University of Derby-led study.

Males providing [gifts](#) of food to females during courtship or mating is

common in the insect world but entomologists have debated why this practice has evolved. The two main theories are that the male is using food to distract the female, so he can mate for longer, or that he is trying to ensure she is better fed, to ensure stronger offspring.

In a bid to answer this question, Karim Vahed, Professor of Entomology at the University of Derby, led a study looking at the mating habits of bushcrickets, or katydids. In most cases male bushcrickets do give food gifts, but there are some [species](#) in which the practice has been dropped. Looking at what these males do instead, Professor Vahed and his colleagues realised, can help to tell us about the original reason behind the gift itself.

The results of the joint study - by Professor Vahed, Dr James Gilbert of the University of Sussex, and researchers at the Department of Entomology at the California Academy of Sciences and the Instituto Tecnológico de Ciudad Victoria in Mexico - are due to be published in the online edition of the journal '*Evolution*' on Wednesday May 21.

They reveal that - when it comes to bushcrickets - males' gifts have far more to do with prolonging sperm transfer than any more 'considerate' thoughts about ensuring a good start in life for their children.



Karim Vahed, Professor of Entomology at the University of Derby, with bushcricket.

The researchers looked at 44 bushcricket species. In most, the male produces a food gift of a large blob of jelly (the spermatophylax), which can weigh as much as a third of his own bodyweight.

In a minority of species, male bushcrickets produce little or no food, but instead have evolved a far less pleasant practice. To keep the female attached, males use many bizarre kinds of clasp devices near their genitals that can resemble gin trap teeth, spikes that puncture the female's abdomen, and even 'handcuffs' that completely encircle her.

Dr Vahed said: "Unsurprisingly, female bushcrickets don't take kindly to this sort of treatment and, in those species with prolonged copulation and reduced or absent gifts, females resist by kicking and biting the males, and shifting around to throw them off.

"Males who do present females with a spermatophylax don't receive this kind of resistant behaviour from their partners.

"Such conflict shows that males who don't give gifts are trying to ensure they transfer as much sperm into the female as possible (and often more than she wants). We see this forceful approach by [males](#) in all bushcricket species where nuptial gifts have been lost."

Because of this, Dr Vahed and his colleagues concluded that both of the male approaches to mating - whether using [food](#) or force - were about maximising the number of offspring they produce rather than any concerns about ensuring a good start for their children.

Dr Gilbert added: "If these 'bear traps', 'spikes' and 'handcuffs' have evolved to prolong sperm transfer in bushcrickets which have lost nuptial gifts, it's likely that the nuptial gift serves the same purpose in those species that still use it."

More information: "FUNCTIONAL EQUIVALENCE OF GRASPING CERCI AND NUPTIAL FOOD GIFTS IN PROMOTING EJACULATE TRANSFER IN KATYDIDS." Karim Vahed. *Evolution* (2014) DOI: 10.1111/evo.12421

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