

Does promiscuity prevent extinction?

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These are *Drosophila pseudoobscura* mating. A new study by the Universities of Exeter and Liverpool, UK, on these fruitfly suggests promiscuous females may be the key to a species' survival. Credit: University of Exeter

Promiscuous females may be the key to a species' survival, according to new research by the Universities of Exeter and Liverpool. Published today (25 February) in *Current Biology*, the study could solve the mystery of why females of most species have multiple mates, despite this being more risky for the individual.

Known as 'polyandry' among scientists, the phenomenon of females having multiple mates is shared across most animal species, from insects to mammals. This study suggests that polyandry reduces the risk of populations becoming extinct because of all-female broods being born. This can sometimes occur as a result of a sex-ratio distortion (SR) chromosome, which results in all of the [Y chromosome](#) 'male' sperm

being killed before fertilisation. The all-female offspring will carry the SR chromosome, which will be passed on to their sons in turn resulting in more all-female broods. Eventually there will be no males and the population will die out.

For this study, the scientists worked with the fruitfly [Drosophila pseudoobscura](#). They gave some populations the opportunity to mate naturally, meaning that the females had multiple partners. The others were restricted to having one mate each. They bred several generations of these populations, so they could see how each fared over time.

Over fifteen generations, five of the twelve populations that had been monogamous became extinct as a result of males dying out. The SR chromosome was far less prevalent in the populations in which females had the opportunity to have multiple mates and none of these populations became extinct.

The study shows how having multiple mates can suppress the spread of the SR chromosome, making all-female broods a rarity. This is because males that carry the SR chromosome produce only half as many sperm as normal males. When a female mates with multiple males, their sperm will compete to fertilise her eggs. The few sperm produced by males carrying the SR chromosome are out-competed by the [sperm](#) from normal males, and the SR chromosome cannot spread.

Lead author Professor Nina Wedell of the University of Exeter said: "We were surprised by how quickly - within nine generations - a population could die out as a result of females only mating with one partner. Polyandry is such a widespread phenomenon in nature but it remains something of an enigma for scientists. This study is the first to suggest that it could actually save a population from extinction."

Provided by University of Exeter

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