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| **Optimal polyandry: the effects of multiple mating on female fitness** |
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| In the past few decades, the study of polyandry has received increasing scientific attention with an emphasis on the fitness benefits and costs that females derive from mating with multiple males. The accumulation of studies on polyandry has demonstrated that a single mating typically does not maximize females’ fitness. Our understanding of how polyandry affects female fitness, however, remains limited as existing studies mostly compared the fitness outcomes of mating with a single male vs. two or three other males. While informative, such studies likely do not capture realistic rates of female multiple mating in most species. To address this gap, we conducted controlled mating trials with female fruit flies (*Drosophila melanogaster*) either at low (every eight days), medium (every four days), or high (every other day) rates while controlling for exposure to harassment from males. We found that low mating rate females experienced sperm and/or seminal fluid limitations that constrained offspring production while high mating rate females produced the most lifetime offspring. We also found no evidence of differential mortality between treatments. |