



The pros and cons of mating with strangers

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A recommendation of

Clemente SH, Santos I, Ponce AR, Rodrigues LR, Varela SAM & Magalhaes S. 2017 Despite reproductive interference, the net outcome of reproductive interactions among spider mite species is not necessarily costly. *bioRxiv* 113274, ver. 4 of the 30th of June 2017. doi: [10.1101/113274](https://doi.org/10.1101/113274)

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Interspecific matings are by definition rare events in nature, but when they occur they can be very important, and not only because they might condition gene flow between species. Even when such matings have no genetic consequence, for instance if they do not yield any fertile hybrid offspring, they can still have an impact on the population dynamics of the species involved [1]. Such atypical pairings between heterospecific partners are usually regarded as detrimental or undesired; as they interfere with the occurrence or success of intraspecific matings, they are expected to cause a decline in absolute fitness.

The story is not always so simple however, and it might all depend on the timing of events and on the identity of the partners. Using the herbivorous mite *Tetranychus urticae* as a model, Clemente et al. (2) experimentally arranged matings with two other *Tetranychus* species that commonly share the same host plants as *T. urticae*. They carefully controlled the history of events: heterospecific matings could occur just before, just after, 24h before, or 24h after, a conspecific mating. Interestingly, the oviposition rate (total fecundity) of females was increased when mating with a heterospecific individual. This suggests that heterospecific sperm can stimulate oogenesis just as conspecific sperm does. Such a positive effect was observed for matings involving *T. ludeni* females and *T. urticae* males, but a negative effect is found in the interaction with *T. evansi*. Sex-ratio (fertilization success in those species) could also be impacted but, unlike fertilization, this occurred when the mating events were distant in time. This is at odds with what is observed in conspecific matings, where sperm displacement occurs only if mating events are temporally close. Overall, the effects of heterospecific

mating were quite variable and it is challenging to predict a single, general, effect of interspecific matings. The net effect will likely be context-dependent, depending on the relative frequency of the difference mating sequences and on how fecundity and sex-ratio contribute to overall fitness, both aspect strongly influenced by the population dynamics and structure.

References

- [1] Gröning J & Hochkirch A. 2008. Reproductive interference between animal species. *The Quarterly Review of Biology* 83: 257-282. doi: [10.1086/590510](https://doi.org/10.1086/590510)
- [2] Clemente SH, Santos I, Ponce AR, Rodrigues LR, Varela SAM & Magalhaes S. 2017 Despite reproductive interference, the net outcome of reproductive interactions among spider mite species is not necessarily costly. bioRxiv 113274, ver. 4 of the 30th of June 2017. doi: [10.1101/113274](https://doi.org/10.1101/113274)

Appendix

Reviews by Michael Greenfield and Joël Meunier, authors' replies and recommender's decisions:
<http://dx.doi.org/10.24072/pci.evolbiol.100025>