

The weird world of nuptial gifts

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Snails are one of many creatures in the animal kingdom who exchange gifts to improve their chances of mating successfully. Credit: Schristia

An opinion piece published in *Biology Letters* today delves into the weird world of nuptial gifts.

Nuptial gifts are widespread in the [animal kingdom](#). Snails, squid, crickets, ladybirds, bedbugs, butterflies, fireflies and humans have all been known to deliver gifts to their prospective mates in attempts to improve mating success.

Typically nuptial gifts are given by a male to female mate, though it's the female of the *Phoreticovelia disporta* insect species who gifts the male. Gifts may also be exchanged between simultaneous hermaphrodites like slugs, snails and earthworms during copulation. The gifts themselves show astounding diversity, from nutritional foods and salivary gland secretions to love darts, which are sharp thorn-like structures that are stabbed into a mate and transfers mucus to aid the survival of delivered sperm. Some mates even gift their beloved with body parts.

Although scientists are agreed that nuptial gifts can play vital roles in precopulatory and postcopulatory

sexual selection, the researchers behind this paper say the evolution of nuptial gift giving is little understood and little attention has been given to producing a formal definition. The team suggest a new definition to encompass the wide diversity of gifts and gift-giving on display throughout nature: 'Nuptial gifts are material (beyond the obligatory gametes) provided by a donor to a recipient during courtship or copulation in order to improve donor fitness'.

The researchers also propose categories for nuptial gifts, grouping them as either gifts produced directly by the giver; or food-gifts which are collected or captured by the generous would-be mate. Gifts are also grouped in relation to how they are received. Oral gifts are absorbed through the digestive tract and genital gifts through the reproductive tract. The final, and goriest, grouping are transdermal gifts which the donor traumatically injects through the body wall of their intended.

The team highlight that 'an important feature of [their] definition is that it avoids making assumptions concerning how the gift affects recipient fitness'. While nuptial gifts are given to improve the donors fitness, making it more likely that they will mate successfully to sire offspring, the fitness of gift-receivers may not fare so well. In fact some land snails stab their partners with darts covered with hormone-like substances during copulation, which triggers physiological effects to reduce the fitness of the recipient snail mate with others.

The researchers highlight the possible directions for future research into nuptial gift giving including testing hypotheses about how gift-giving evolved and investigating how females might have counter-adapted to avoid manipulation by male gift-givers.

More information: Sara M. Lewis, Karim Vahed, Joris M. Koene, Leif Engqvist, Luc F. Bussière, Jennifer C. Perry, Darryl Gwynne, and Gerlind U. C. Lehmann. "Emerging issues in the evolution of animal nuptial gifts." *Biol. Lett.* July, 2014 10 7

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