

Spiteful soldiers and sex ratio conflict among parasitoid wasps

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The social insects provide some of the most fascinating examples of altruism in the natural world, with sterile workers sacrificing their own reproduction for the greater good of the colony. Research carried out in Canada and the United Kingdom reveals that, for a peculiar group of parasitic wasps, this sacrifice is more sinister.

For years the function of sterile 'soldier' larvae in polyembryonic parasitoid wasps has been controversial. Traditionally, these have been viewed as bringing a benefit to their broodmates as a whole, for example by protecting them from attack by other species of parasitoids. More recently, it has been suggested that soldiers are primarily involved in a battle of the sexes, which they wage against their own siblings.

Andy Gardner, Ian Hardy, Peter Taylor, and Stuart West, in a theoretical study of how natural selection shapes the behavior of these larvae, published in the April issue of the *American Naturalist*, have rejected the brood-benefit hypothesis and found in favor of the view that their behavior is altogether spiteful.

Andy Gardner, now at St John's College, Oxford University, explains, "We found that the bizarre genetics of these wasps means that brothers value their sisters more than sisters value their brothers, and so if sterile larvae function for the good of the group then it should be brothers who more willingly make the sacrifice. Alternatively, if the sterile larvae are used by each sex to wage war against the other sex, then it should be primarily females who are interested in killing their brothers. As it

happens, most sterile larvae are female, suggesting a primary role in sex conflict."

This work also explains the often strongly skewed sex ratios in these wasps, where female outnumber males, due to sex differences in killing behavior. More generally, it reveals how Darwinism can be used to explore the function of puzzling animal behaviors.

Source: University of Chicago

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