

Male wasps help to defend the nest

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Nest of the *Microstigmus nigrophthalmus*.

Male wasps are not exactly famous for their contributions to domestic life. Most do precious little, leaving the nest's maintenance chores to the females. Now a group of researchers has shown that when push comes to shove, the males of a tiny wasp species can actively protect their home.

During fieldwork in Brazil's Atlantic forest, known as Mata Atlântica, Eric Lucas and Jeremy Field from the University of Sussex, observed that sometimes male wasps do react aggressively against intruders in their nest.

'This behaviour was observed only rarely because females are usually the nest defenders, so male aggression was seen only when females were absent,' explains Lucas. 'We wanted to find out whether males really were effective nest guards.' And to do this, the team investigated whether nests with only males were more likely to escape attacks than

nests with no adults at all.

Lucas and Field focussed on a 6mm-long wasp species – *Microstigmus nigrophthalmus* – chosen for its relatively large size and abundance of nests. This species lives in ball-shaped nests that hang from leaves by a thread of silk. The nests are just one or two centimetres across and have an entrance on top. Males usually lounge in the nest, while females hunt for caterpillars to feed the larvae and protect the nest from parasitic intruders.

The team observed and filmed 19 nests in the Mata do Paraíso Forest in Brazil and registered the number of resident male and females and their behaviour over a period of 4-11 weeks. They also selected an additional 20 nests for a controlled study to test whether males have a significant impact on nest survival: the team removed all females from half the nests (leaving the males), and all adults from the other ten.

The results confirm that males can defend their nest. If at least one female is present, the male reverts to its passive behaviour. But when no female is at home, males make a significant difference. Four of the ten nests left with no adults were attacked and the brood was destroyed during the period of the experiment. Of the other ten nests, defended by males, only one was lost.

So if the males are not completely useless, why don't they cooperate more often? 'The reasons why males don't play a more active role in colony life are the subject of active debate,' says Lucas.

A possible reason is the unusual genetics of the bee and wasp Hymenoptera group, that means females are more closely related to their full sisters than males are to any of their offspring. In this view, females might have a lot more to gain to look after the brood than males.

Or maybe males simply don't know what to do. In solitary wasp species, males have nothing to do with brood care – just as male leopards or cheetahs leave the female to her own devices after mating. So when the species evolves a social behaviour, males don't have the know-how to join forces with females.

Lucas and Field also suspect that nest defence might not be a truly altruistic behaviour and maybe the males don't have the brood's best interest in mind: 'If the males are looking after the nest itself, it may be for their own survival rather than that of the brood,' suggests Lucas – because the male's own survival is increased by having a nest to live in, rather than spending his life exposed to predators.

This is an important distinction to make: 'If I am on a sinking ship in the middle of the ocean and prevent it from sinking through my efforts, I have saved the lives of everyone else on board, but the act would not be called altruistic because I have also saved my own life,' explains Lucas adding that 'I would have acted in the same way even if no one else had been on the ship.'

The tiny [wasps](#) might be following the same idea: the goal is to save the [nest](#) and preserve their own base of operations. If the brood benefits from the effort, so much the better.

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