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Armoured wasps chop off opponents' heads in brutal fig wars

Bite first, ask questions later. That seems to be the motto of some parasitic fig wasps, which fight indiscriminately inside tiny fig fruits. They even battle wasps of other species that do not compete with them for mates.

Wasps are the main pollinators for the 750

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species of fig worldwide, but some non-pollinating fig wasps also live in the fig fruit as parasites. For these parasites inside their fig world, [female mates are so scarce](#) that males violently fight among themselves to get them.

Theoretically, they should only attack other males of the same species – their competition. However, some fig wasps fight males from any similar-looking wasp species, says [James Cook](#) of the University of Reading in the UK and Western Sydney University in Australia. And the cost of engaging the wrong opponent can be grave. “We do find severed heads quite often,” says Cook.

Intrigued by the severed heads, Cook’s team investigated three *Sycosapter* fig-wasp species in Australia. They picked the figs just as the wasps were becoming active and looked inside to assess the battleground.

They found that most fights were between males of the same species. However, brothers rarely fought each other because female wasps tend to only lay one male egg per fig, leaving a solo king to rule each fruity world.

But with many mother wasps doing the same, and unrelated species of wasp also laying eggs inside the same figs, the place gets crowded, with up to 100 wasps of all species within a fig.

Fighting blind

Surprisingly, a significant proportion of fights were between males of different species, which would not have been competing for mates.

The heavily armoured wasps use their massive jaws to bite and grapple with each

other, tearing off legs, antennae and even heads. The wasps are a few millimetres long and built for battle, with no wings, thick exoskeleton armour and spikes on their bodies.

One explanation for the indiscriminate fighting is that the wasps cannot recognise their opponents.

Or it could just be beneficial to strike first. The wasps are crawling inside a 2-centimetre-long fig fruit, filled with hundreds of flowers and hardly any light. In that situation, it is hard to properly judge your enemy, and while you're measuring them up, they may have already killed you, says Cook.

Fighting to the death is not normal behaviour in the animal kingdom. But the male parasitic fig wasps only live for a day or two as adults, never leaving the confines of the fig, so "although they're risking their life, the future value of their life is actually quite small", says Cook. And with only around three females of their species wandering inside each fig fruit, each opportunity to mate could be the last.

This fulfils the predictions of resource competition theory, which state that when there is intense competition for valuable resources, with no second chances, then it is worth risking your life, says Cook. "If your future prospects are really dismal then it's worth risking a lot on the current opportunity".

Surprising result

The fact that males kill those of other species is an intriguing finding, as it questions the constraints on and perfectibility of adaptation, says ecologist [Allen Herre](#) at the Smithsonian Tropical

Research Institute in Panama. He would like to see this result in other non-pollinating wasp species to see whether the same pattern holds up more widely.

Ecologist [Charlotte Jandér](#) at Harvard University agrees that the cross-species fighting is an interesting and surprising result. But she says that fighting is not limited to males. Her team found last year that in some pollinating fig-wasp species, the females do the fighting. "For these females the scarce resource is not mating partners, but egg-laying sites," she says.

Thankfully, this war is not raging in the figs we eat. The fruit farmed by humans is a different species of fig that has separate wasp-producing and seed-producing trees. We only eat figs from the seed-producing trees, which do not contain any wasps – apart from, perhaps, the disintegrated bodies of the few females that originally pollinated them.

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