

Why wasps become so annoying at the end of summer

August 27 2020, by Seirian Sumner



Credit: AI-generated image ([disclaimer](#))

The sausages are sizzling, the burgers browned, and the beer is cold. You're all set for the perfect end-of-summer BBQ. Alfresco dining, drinks in a garden of a country pub, ice-creams—we grasp at the last shreds of summer, precious times with loved ones before an uncertain winter of local lockdowns and Zoom.

And then an unwanted visitor arrives.

Jazzily dressed, trim-waisted, your uninvited guest is brimming with confidence. She's carefree and cocky—anyone's sweet drink is hers for the taking. If you stand in her way or brush her aside, you'll find she's got a nasty surprise in her stripy derriere.

As the end of the summer approaches, so does wasp season, when these hated insects start to bother us at our picnics and beer gardens. It happens every year, without fail, and feels especially rude at a time when we're counting the few days we have left for outdoor, coronavirus-friendly socialising.

There are no silver linings to a pandemic-gripped world. But one thing it has perhaps given us is a word to explain the late-summer antisocial behaviour of [wasps](#): furlough. And as someone who spends their time [researching wasps](#), a word to excuse their bad behaviour is pretty exciting. If you are one of the [many](#) people furloughed right now, you are especially well placed to understand the late-summer wasps.

Worker wasps

Despite appearances, wasps only tend to upset your outdoor life at the end of the summer. There is, in fact, plenty of wasp action throughout the summer, but you are not interesting enough for them to bother with at that time. It is very likely that the wasp you swatted at your BBQ last weekend has spent the summer removing caterpillars from your vegetable patch, or aphids from your tomatoes.

That wasp was part of mother nature's team of pest controllers: without wasps, we would need to use a lot more pesticide to keep our lettuces whole and tomatoes aphid-free. Wasps are good; they are [natural enemies](#) of other (even peskier) insects.

To that hard-working mid-summer wasp, your prosecco luncheons and BBQ beers were a bore, because what she was after was protein. She is a hunter, a [worker](#). In mid-summer, her purpose is to provide her baby siblings with protein. She is a sterile cog in a big superorganismal machine, driven by evolution to pass on her genes by raising siblings. Usually, the protein she hunts is other insects (garden caterpillars or flies). She brings prey to the colony where there are thousands of baby siblings to feed.

She might chew the prey up a little (and perhaps ingest some too) before feeding it directly to a larva, but the bulk of the protein goes to the babies. In return for her hard work, the larva will give her a carbohydrate-rich sugary secretion. This is thought to be the main mode of nutrition for adult worker wasps. Each colony will produce several thousand worker wasps and they are kept very busy for much of the summer feeding these brood; with the drive of a drug addict, they are hooked on the sugary secretions from the lips of their baby siblings.

Summer leave

As summer progresses, the colony grows into a citadel with up to 10,000 workers; concurrent with this growth in worker numbers is brood pupation. When a larva is fully fed (at about two weeks of age), it is ready to metamorphose into a beautiful adult wasp. It will spin its own pupal cap and it no longer needs the care of its adult siblings.

Not all brood pupate at once; there are still many larvae left to feed. But the ratio of workers to larvae shifts, and as summer tips into autumn, this ratio shifts further, leaving more and more workers under-employed and—importantly—without their sibling-administered sugar fix. They have, in effect, been furloughed. And like furloughed humans, their behaviour changes accordingly.

Now they look for sugar away from the colony—often at your picnics. In the absence of those easy sugary feasts, they visit flowers: pollinating, just like bees. In fact, wasps can be [as effective](#) at pollination as some bees. In evolutionary terms, your picnic is a relatively novel distraction.

Such behavioural shifts arise in response to the needs of their society; shifting demands are perceived by individual workers and result in changes in how genes are expressed in their brains. Inside these insect brains lie [some clues](#) about how helping behaviour evolves and what the molecular machinery is behind it.

Inside wasp brains

My team is [researching](#) the molecular machinery underpinning the behaviour of these wasps to understand how and why social traits evolve. The worker wasps you see at your picnic are part of one of the most complex biological products of evolution found in the natural world: a superorganismal colony.

Just like a honeybee hive, each colony is headed by a single mother queen who lays all the eggs; her early season offspring are the sterile workers who help raise more brood and eventually rear the "sexuals" (males and next year's queens). The queen, workers and sexuals all look and behave very differently, so much so that you might mistake them for different species. They depend on each other as different components of the superorganismal "machine". What is extraordinary is that they are all produced from the same building blocks—they have a shared genome. This is possible because genes are expressed differently.

Understanding how genomes evolve to produce such contrasting but integrated components of a superorganism remains one of the big outstanding questions in evolutionary biology. That wasp at your picnic is a highly honed product of evolution with an important role in a society

that outstrips our own in complexity and coordination.

No one likes their picnic plagued with wasps, but with some understanding of the biology behind their behaviour, everyone can adapt to respect them. The pandemic has forced changes in our own behaviour and we have adapted. If there are any silver linings to the challenges we currently face, perhaps one is that we can empathise a bit more with these misunderstood and important insects.

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