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## Ants Welcome at Caterpillar Picnics

Most caterpillars avoid ants out of self-preservation. But some strike a deal with their predators. In exchange for receiving nectar droplets, ants groom the caterpillars and fend off other predators. Now researchers have shown that such symbiotic relationships also come with a twist: Lycaenid caterpillars, when threatened, increase their production of nectar to entice the ants to stick around in a crisis.



Nature has many examples of mutually beneficial relationships. But often the terms seem set in stone. In the case of pollination, for example, many flowers always offer bees the same amount of pollen. But some relationships have a more dynamic balance. A yucca, for example, will step up its self-defenses if its pollinator begins to take advantage of the relationship. A team of researchers led by biologist Anurag Agrawal at the University of Toronto in Canada wondered if adjustments like this "inducible defense" might be found in the caterpillar-ant relationship.

To find out, Agrawal's team gently squeezed lycaenid caterpillars with tweezers to mimic an ant attack. Caterpillars surrounded by ants oozed twice as much sugar as they normally do when being groomed, the researchers report in the 22 September issue of the *Proceedings of the Royal Society of London*. The ants, in turn, spent 30% more time tending to the caterpillars than their peers grooming the unsqueezed caterpillars. "Organisms are not standing on a corner passing out dollars bills," says Agrawal in explaining why he thinks those two findings are related. "The [caterpillars] are giving them to those that help them."

The study provides researchers with another small piece of the puzzle that describes animal behavior. "It shows how ideas about inducible defenses in plants can provide novel insights into the evolution of symbioses between ants and other insects," says biologist Naomi Pierce of Harvard University.

**--JEANNE ERDMANN**

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