

Zombie Antpocalypse

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Strolling through the forest, my sisters beside me, in the search of food. Well, not actually searching, someone has already found our meal, I'm just following the trail, laid down by those who have already traveled this route. Turns out tonight's feast is a dead cockroach. It's great news, especially due to our recent decline in numbers.

Now I just need to head back to headquarters and share the food with the rest of the colony. Not everyone can get out to find their own food. The brood always are needing food, and of course the workers who tend to them, the ones that don't leave the nest. Most importantly is our queen, affectionately known as mom, she is far too precious to head out into the dangers of the world, so we must feed her too.

Of course, there is the farm as well. There we have our aphids, we care for them and protect them from anything else that would cause them harm. They produce delicious honeydew, which is shared among the colony. This of course keeps our tree healthier, by removing the honeydew normally dropped by the aphids which can encourage molds to grow.

Recently my fellow workers have been seen wandering away from our well trodden trails and off into the canopy. They are, what can only be described as, scavenging, when there is no need. We already have a food source that is yet to be exhausted. They can't be argued with. They feel the need to leave. It's the spores. Above us is a graveyard of my sisters' corpses. There is some weird structure growing from their heads. There is an effort to clear them and move them away from the colony but the number of them is growing faster than they can be cleared. They are like zombies, they are exhibiting odd behaviors and can't be reasoned with. I've even seen some fall

A short while later...

Why do I feel compelled to leave the colony? I just know something's not right. The humidity I think. So, I travel, away from my home, away from my sisters. And climb, not a common place for me to go. Once I have traversed the plant I feel a bit better, the underside of the leaf seems safer to me. And then I feel an uncontrollable urge to clasp on to the leaf, I stick my mandible in. Why can't I let go? And there I stay, but I cannot move, my muscle won't obey. My sisters move underneath me, foraging as usual. It is this wretched fungus, I see now, not that anything can be done. I have seen some of my sisters before, fungus growing from their heads, and spreading the spores, as I will do now. Spread the spores to the rest of the colony. This will be some ants demise. I just hope someone can find me and move me before I infect anyone else

Background:

This story is based on *Ophiocordyceps unilateralis* (Tul.) Petch (1931), an entomopathogenic fungi (a parasite of insects) acting on a worker carpenter ant. *Ophiocordyceps unilateralis* is the cause of, what is commonly known as, zombie ants. When ants are infected by the fungi this changes their behavior. Rather than following the pheromone trails laid by other ants from the colony they will move randomly, and not be able to make their way back to the nest. The *O. unilateralis* can also cause the ants muscles to spasm, and for them to fall from the trail. The fungi then causes the ants to climb plants until they reach a specific humidity, where they sink their mandibles into the main vein of the leaf, the *O. unilateralis* causes the lock jaw, meaning the ant is unable to detach themselves from the leaf, and will remain their even after death. This causes the ants to die in a place with optimal environmental conditions for the fungus to achieve its maximum reproductive output. The fungus continues to reproduce inside the ant, until a fruiting body emerges from the ant's head, this is where spores are released from, which will continue to infect other ants (1).

Ophiocordyceps unilateralis has the ability to wipe out entire colonies. Research is being completed to see whether this fungus could be used to control carpenter ants which are considered pests because of the damage they can cause to wood used in the construction of buildings.

References

1. Evans HC, Elliot SL, Hughes DP. Hidden diversity behind the zombie-ant fungus *Ophiocordyceps unilateralis*: four new species described from carpenter ants in Minas Gerais, Brazil. PloS one. 2011 Mar 2;6(3):e17024.