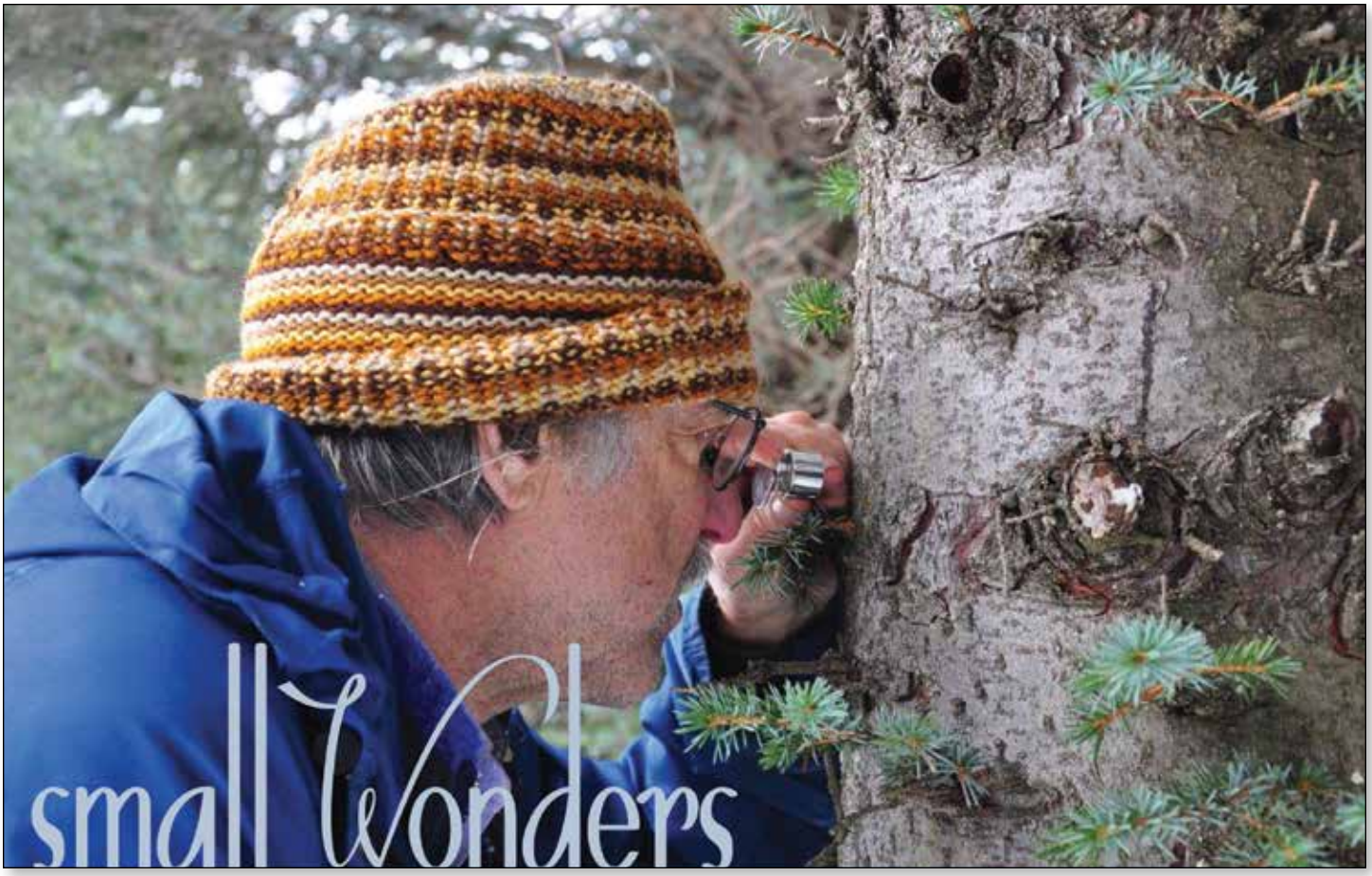

ZOMBIE ANTS

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Photographs by Joseph Warfel

In the last few decades, the word zombie has caused a dramatic adrenal rise among most of those who hear it. These staggering, stupefied, usually cannibalistic individuals—the zombies, not those with an adrenal rise—are the major characters in movies, Naughty Dog video games, TV shows, the print media, music, and literature. But zombie ants? Even zombie aunts would seem more the stuff of media entertainment …

The ant in question is usually a carpenter ant (*Campanotus* sp.), while the fungus that enslaves the ant is *Ophiocordyceps unilateralis,* a complex with 15 species in its core clade. Botanist David Hughes once wrote that the great Victorian naturalist Alfred Russell Wallace was the first person to document the species, but he's since taken back this assertion. One thing is certain, however—the individual who did make the initial write-up of the species didn't use the word zombie in their description.

Truth to tell, the ant isn't so much zombified as it is puppeted by the fungus. The hyphae penetrate the ant's exoskeleton and enter its muscular structure, causing it to stop walking and begin climbing. Since it's better to spread one's spores from a height rather than low to the ground, *O. unilateralis* has turned a terrestrial insect into more or less an aerial one.

In the tropics, the ant climbs a short distance, then fixes it mandibles on a leaf. In temperate regions, it climbs a lot higher, then fixes those mandibles on a twig or branch. Several days later, a stroma rises from the ant's dorsal pronotum. Soon spores are raining down on what the fungus hopes is an ant trail. Some species in the *O. unilateralis* complex rain down spores at exactly the time of day when ants march along the trail.

As far as I know, a typical zombie is brain dead. Not zombie ants! For *O. unilateralis* might take over its host's muscles, but it doesn't seem to enter its brain. Thus the ant doubtless remains conscious of its doomed state. This is not an example of the sadistic nature of the fungus. Rather, it perhaps realizes that if it took over the brain, the ant might become mentally cloudy and not be able to engage in its death grip in a satisfactory fashion. Whereupon the all-important stroma would not appear.

Unlike the somewhat better known *Ophiocordyceps sinensis*, *O. unilateralis* has hardly gotten any attention as a medicinal. At least not yet. But given the current fungal medicinal craze, I suspect it won't be long before there'll be papers telling the world that clinical trials show various *O. unilateralis* chemicals inhibit fatigue and loss of stamina in (not ants!) rats, whereupon you'll doubtless start finding this latest Small Wonder at your friendly neighborhood health food store.