

TRILOBITES

# This Dracula Ant's Jaws Could Make It the Fastest Animal on Earth

You could call it an ant speed record.

By Douglas Quenqua

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The Dracula ant is not much of a traveler. Located mostly in the tropics of Africa, Australia and Asia, the tiny creatures spend most of their lives burrowed into tree trunks or underground, to the endless frustration of scientists who would like to study them.

So, imagine the surprise of the researchers who recently discovered that Dracula ants may be the fastest animals on earth.

To be clear, you could easily beat the Dracula ant in a foot race. But one species, *Mystrium camillae*, has a pair of ingeniously-designed mandibles that can snap at 200 miles per hour, according to a study published Wednesday in Royal Society Open Science. That's 5,000 times faster than you can blink your eye and 1,000 times faster than you can snap your fingers. It's also three times faster than the mandibles of the trap-jaw ant, the previous fastest-moving insect on record.



*Mystrium camillae*, an elusive species of Dracula ant. Adrian Smith

The findings provide new insight into ant evolution and could help engineers design more powerful and efficient machines.

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Fredrick Larabee, an entomologist at the Smithsonian Natural History Museum, had been studying ants with powerful jaws at the University of Illinois in 2014 when his colleague, Andrew Suarez, was lucky enough to collect two colonies of Dracula ants in Borneo.

“We had spent four or five years trying to get a single colony,” containing thousands of insects, said Dr. Larabee. “But we were never able to get more than a few workers.”

Once Dr. Suarez brought the colonies back to his Illinois lab, the researchers quickly realized that their equipment wasn’t powerful enough to study them.

“The ants were so fast that we couldn’t slow their motion down with the cameras we had,” said Dr. Larabee. “That’s when we knew we were onto something special.”

They transported the ants to Duke University, where they could film them with a camera that captured up to 1 million frames per second. (The camera at the University of Illinois could capture only 100,000 frames per second.) They also used X-ray imaging to study the mandibles in three dimensions.

They found that unlike trap-jaw ants, whose jaws snap close from an open position, this Dracula ant uses its mandibles much like a pair of snapping fingers. The ant presses two small appendages together, spring loading them with potential energy, until one slides past the other. The immense force generated by the pent-up energy can be used to stun or kill prey, which are then brought back to the nest and eaten. It takes just 0.000015 seconds for the appendages to accelerate from 0 to 200 miles per hour.

By comparing the jaws of Dracula ants and trap-jaw ants, a genus of tropical ant whose mandibles reach speeds of 140 miles per hour, researchers can see how similar functions evolved in different ways. Dr. Larabee and his team also plan to further study how the Dracula ant uses its mandibles in the wild.

Of course, records are made to be broken, and with the increasing availability of high-speed cameras making it easier to clock rapid animal movements, Dr. Larabee anticipates the Dracula ant won't hold the speed record for long. "I suspect there are several other animals that are faster," he said.

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