

Beetles use dung balls to stay cool

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Researchers from South African and Sweden applied silicone boots to the front legs of dung beetles as alternative protection from the heat to prove their theory that dung beetles climb their dung balls to cool down. Credit: Wits University

Dung beetles roll their feasts of dung away to avoid the hoards of other hungry competitors at the dung pile. But now a team of researchers from South Africa and Sweden have discovered that they also use their balls in another, rather clever way. The moist balls keep the beetles cool even as

they push a weight up to 50 times heavier than their own bodies across the hot sand.

"The beetles climb on top of their moist balls whenever their front legs and heads overheat," said Prof. Marcus Byrne from Wits University.

"We stumbled upon this behaviour by accident while watching for an 'orientation dance' which the beetles perform on top of their balls to work out where they're going. We noticed that they climbed their balls much more often in the heat of the midday sun."

Further experiments showed that this midday phenomenon only held true when the beetles were crossing hot ground. In fact, beetles on hot soil climb their balls seven times as often as those on cooler ground.

To show that it was the beetles' hot legs that made them climb the ball, the researchers applied some cool (as in temperature) [silicone](#) boots to their front legs as alternative protection from the heat. "To our great surprise, this actually worked, and beetles with boots on climbed their balls less often," said Dr Jochen Smolka from Lund University, who collaborated on the research.

The discovery marks the first example of an insect using a mobile thermal refuge in this way. It is also a demonstration of the remarkably sophisticated strategies that [insects](#) and other cold-blooded creatures employ to maintain their [body temperatures](#).

Once on top of a ball at midday, the [beetles](#) were often seen "wiping their faces", a preening behavior that the researchers suspect spreads regurgitated liquid onto their legs and head to cool them down further. That's something the insects never do at other times of day.

The findings are yet another reminder of the many creative solutions found in nature. According to Smolka, "Evolution has an astonishing

ability to make use of existing structures for new purposes – in this case using a food resource for thermoregulation."

More information: Smolka et al.: "Dung beetles use their dung ball as a mobile thermal refuge," *Current Biology*.

Provided by Wits University

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