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Mystery of Zebra's Stripes Finally Solved?

by [Jane J. Lee](#) on 9 February 2012, 12:35 PM | [0 Comments](#)

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If you're planning a trip to Africa, pack that zebra-print shirt that's been hiding in the back of your closet. A new study finds that zebra stripes disrupt light patterns that tsetse flies and horseflies use to find food and water.

The discovery, experts say, is an exciting step forward in solving the riddle of why zebras sport such unique patterns. "It's the first really convincing evidence to come in the 120 years since people started to debate this issue," says Tim Caro, a behavioral ecologist and

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Inconspicuous stripes. The hodgepodge of reflected light patterns from a zebra's coat render the animal unappealing to biting insects such as horseflies.

Credit: Gabor Horvath

evolutionary biologist at the University of Cambridge, Cambridge, UK, who was not involved in the study.

Researchers have speculated about zebra stripes for years, says Graeme Ruxton, a visual communication researcher at the University of Glasgow in the United Kingdom, who was not involved in the current work.

Reasons for the jailhouse pattern include confusing predators, being camouflaged in grasslands, and allowing the animals to pick each other out in large herds.

But no one had tested these hypotheses experimentally, says Susanne Åkesson, an evolutionary ecologist at Lund University in Sweden and one of the authors of the new study. She was curious about whether zebra stripes were attractive to tabanids, a family of insects that includes tsetse flies and horseflies—notorious pests that can transmit illnesses such as sleeping sickness and Chagas disease. Earlier research testing tsetse fly preferences for black, white, or striped landing surfaces found that the flies preferred black squares, but the testing didn't explain why.

Åkesson and her colleagues started with something they knew about horseflies. Their previous work found that the insects were most attracted to dark-colored horses, compared with white horses, because darker coats reflected light waves oriented in the same direction. This polarized light was the same as that reflected from pools of water, where the flies lay their eggs. White coats didn't reflect this type of polarized light.

To see whether a zebra's white stripes would make it less attractive to tabanids, the team set up a series of experiments on a Hungarian horse farm. They tested the attractiveness of solid black or white, or black and white striped squares to tabanids, as well as black, brown, white, or striped life-sized plastic horses. They also tested gray squares with varying numbers and widths of stripes to see how patterns affected horsefly preference.

Researchers used vegetable oil to trap tabanids that alighted on their experimental squares and coated the plastic horses with a clear, odorless glue to nab flies when they landed.

It turns out that [stripes are even less attractive to tabanids than solid white-colored surfaces](#), the team reports online today in *The Journal of Experimental Biology*. That's because stripes reflect multiple light patterns, whereas solid colors reflect uniform patterns, which these flies prefer, the authors say. So even a solid white square is preferable to stripes.

The team notes that these results need to be confirmed with zebras in their natural habitat. Odors can make colors more attractive to tsetse flies, they point out, and zebras in the wild emit very strong smells. It's possible that eau de zebra may overwhelm off-putting visual cues for tabanids looking for a meal.

Zebras don't really encounter tsetse flies out on the open plain, Caro says. But Åkesson points out that zebras and flies both hang out near water.

Despite these caveats, this paper is a very exciting piece of work, Ruxton says. It's far and away the most rigorous experimental study on a reason for zebra stripes by an order of magnitude, he says.

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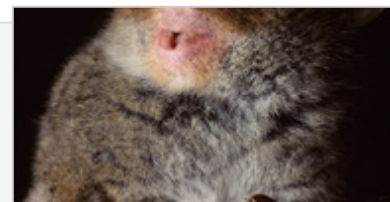
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