How the zebra got its stripes

February 9 2012

If there was a 'Just So' story for how the zebra got its stripes, I'm sure that Rudyard Kipling would have come up with an amusing and entertaining camouflage explanation. But would he have come up with the explanation that Gabor Horvath, Susanne Akesson and colleagues from Hungary and Sweden have: that zebra's stripes stave off blood-sucking insects? The team publishes their discovery that zebra stripes is the least attractive hide pattern for voracious horsefiles in the *Journal of Experimental Biology*.

Horseflies (tabanids) deliver nasty bites, carry disease and distract grazing animals from feeding. According to Horváth and colleagues, these insects are attracted to horizontally polarized light because reflections from water are horizontally polarized and aquatic insects use this phenomenon to identify stretches of water where they can mate and lay eggs. However, blood-sucking female tabanids are also guided to victims by linearly polarized light reflected from their hides. Explaining that horseflies are more attracted to dark horses than to white horses, the team also points out that developing zebra embryos start out with a dark skin, but go on to develop white stripes before birth. The team wondered whether the zebra's stripy hide might have evolved to disrupt their attractive dark skins and make them less appealing to voracious bloodsuckers, such as tabanids.

Travelling to a horsefly-infested horse farm near Budapest, the team tested how attractive these blood-sucking insects found black and white stripes by varying the width, density and angle of the stripes and the direction of polarization of the light that they reflected. Trapping

attracted insects with oil and glue, the team found that the striped patterns attracted fewer flies as the stripes became narrower, with the narrowest stripes attracting the fewest tabanids.

The team then tested the attractiveness of white, dark and striped horse models. Suspecting that the striped horse would attract an intermediate number of flies between the white and dark models, the team was surprised to find that the striped model was the least attractive of all.

Finally, when the team measured the stripe widths and polarization patterns of light reflected from real zebra hides, they found that the zebra's pattern correlated well with the patterns that were least attractive to horseflies.

"We conclude that zebras have evolved a coat pattern in which the stripes are narrow enough to ensure minimum attractiveness to tabanid flies", says the team and they add, "The selection pressure for striped coat patterns as a response to blood-sucking dipteran parasites is probably high in this region [Africa]."

More information: Egri, Á., Blahó, M., Kriska, G., Farkas, R., Gyurkovszky, M., Åkesson, S. and Horváth, G. (2012). Polarotactic tabanids find striped patterns with brightness and/or polarization modulation least attractive: an advantage of zebra stripes. J. Exp. Biol. 215, 736-745. jeb.biologists.org/

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