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White horses are less attractive to horseflies

scienceblogs — "That is Shadoc chief of the Maeras, lords of and not even Theoden, King has ever looked on a better. not shine like silver, and run smoothly as a swift stream?' In the Lord of the Rings, Gar upon a magnificent white ste Shadowfax. White horses ha greatly prized in human soci

sign of wealth and dignity, largely because their bright coats are both rare. There are reasons for that. In the wild, the same conspicuousness inspires legendary tales also makes white horses vulnerable to predators. White horses are also sensitive to skin cancer. But they have an unexpected benefit - they are less attractive to horseflies. Anyone who has been bitten by a horsefly (formally, a tabanid) knows that they're much more irritating than you might think. Rather than puncturing skin, their mandibles are designed to rip and shear. As a result, their bites hurt and they can drive grazing animals to distraction. They can also transfer serious diseases, including Equine Infectious Anaemia, parasitic worms, and even anthrax. Now, Gabor Horvath from Eotvos University, Hungary, has found that white coats are more effective than darker ones. They reflect very little polarised light - light vibrating in a single plane - and it's this light that horseflies use to track down their blood meal. On a sunny June day, Horvath watched two horses - one brown and one white - as they grazed in a local field. Both were almost constantly attacked by horseflies and had to defend themselves by tail-swishing, shuddering, head-swinging, biting, licking and even rolling on the ground. The white horse had the better time of it - photographs revealed that, on average, the brown horse had 3.7 times more horseflies on or near it. Eventually, the attacks were so irritating that the horses were driven into a nearby shade where they gained a temporary respite. Again, the brown horse was the first to cave and spent longer in the shade. Why did the flies prefer the brown horse and shun the white one? It wasn't to do with colour or brightness. Horvath put up two pieces of matte cloth, one brown and one white, and found that both were unappealing to horseflies. It was only when he covered the brown cloth with a shiny, transparent plastic sheet did the flies start to land. Horvath says previous studies have shown that horseflies are attracted to horizontally polarised light. In his experiment, the shiny, brown surface reflects polarised light, vibrating in the horizontal plane, regardless of the angle viewed from. Neither of the matte surfaces do this. To demonstrate this more clearly, Horvath built three life-size horse models, one brown, one white, and one white, and all covered in a sticky coating. Using a polarimeter, he measured the polarised light bouncing off these models and showed that the brown model reflected stronger those reflections, the more flies became stuck to them. Even the white model that reflected the most polarised light - the rump and hindquarters - attracted the most flies. Horvath says that the horsefly's proclivity for horizontally polarised light probably has several functions. It could help them find water sources where they can lay their eggs. And horseflies are usually brown and drab in colour, so landing on a white body could make them more conspicuous to hungry birds. Regardless of the fly-proofing provided by white coats, it's clear that for wild horses, this benefit doesn't outweigh the drawbacks. Otherwise, white horses would be far more naturally common. However, some grazing animals like the zebra and okapi are striped, and individuals carry some degree of white banding. That hasn't escaped Horvath's attention and his paper ends on a tantalising note: "We would like to see that we are preparing a separate paper on the effect of stripes on ho

like zebra, okapi, etc. to the attraction of tabanid flies. We show that stripes make the host quite tabanid-repellent." Reference: Horvath et al. An unexpected advantage of whiteness in horses: the most horsefly-repellent has a depolarizing white coat. Proc Roy Soc B
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