

Jumping spiders that love smelly socks could help fight malaria

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Evarcha culicivora. Credit: Robert Jackson/ University of Canterbury.

(PhysOrg.com) -- Researchers in New Zealand have found that a type of jumping spider prefers the odor of smelly socks to clean ones. The spider is the only predator known to feed indirectly on vertebrate blood by eating the mosquitoes that have fed on the vertebrates, including humans.

The spider (*Evarcha culicivora*), which is also known as the vampire spider, is a native of East Africa and is known to go into a kind of feeding frenzy when it smells blood, killing up to 20 female blood-filled *Anopheles* mosquitoes (the type that carry [malaria](#)) in a single session, but not necessarily eating them all immediately.

Dr Fiona Cross and Professor Robert Jackson of the University of

Canterbury in New Zealand thought the [jumping spider](#) could be a useful tool in the fight against malaria if people were encouraged to have them living in their homes, and even before carrying out their research suspected the spiders might be attracted to human odors because they are commonly found in tall grass next to human dwellings.

Cross and Jackson devised an "[olfactometer](#)" to test their suspicions. They placed each spider into a small holding chamber connected to an exit chamber and pumped air into the holding chamber from one of two boxes. One of the boxes contained a clean sock, and the other contained a smelly sock that had been worn for 12 hours. The spider was free to move into the exit chamber at any time, and this chamber had normal, unscented air.

The results of the experiment were that the spiders stayed in the holding chamber 15 to 30 minutes longer if their air was laden with the scent of smelly socks than if the air carried the clean sock smell. The behavior was seen in all 109 spiders tested, regardless of their age or gender.

Dr Cross said the discovery ties in with some of the spider's behavior patterns, and it is the first time a spider's attraction to human odors has been demonstrated. She said since the spider lives in areas where malaria is rife it makes sense to learn as much as possible about it, especially ways in which people can lure the spiders into living in their houses without attracting more mosquitoes at the same time. She said the spider will never be "the magic bullet" that wipes out malaria, but it could be helpful and it is freely available in the environment.

In 2003 Professor Jackson discovered the spider and showed that it preys on mosquitoes responsible for malaria, especially females engorged after a blood meal. He also showed the spiders can recognize the mosquitoes both from their appearance and their smell, which was unexpected in a jumping spider known more for its excellent eyesight. Jackson then

teamed with Cross and in 2009 they showed the spider becomes irresistible to the opposite sex when they have eaten a meal of blood-filled spiders.

The paper is published in the journal *Biology Letters*.

More information: Olfaction-based anthropophily in a mosquito-specialist predator, by Fiona R. Cross, *Biology Letters*, Published online before print February 16, 2011, [doi:10.1098/rsbl.2010.1233](https://doi.org/10.1098/rsbl.2010.1233)

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