

New research shows how male spiders use eavesdropping to one-up their rivals

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Researchers have made a new discovery into the complex world of spiders that reflects what some might perceive as similar behavior in human society. As male wolf spiders go searching for a mate, it appears they eavesdrop, match and even try to outdo the mating dances of their successful rivals, a behavior seen mainly in vertebrate animals.

The study co-authored by David Clark, a professor of biology at Alma College; J. Andrew Roberts, an associate professor in the department of evolution, ecology and organismal biology at The Ohio State University at Newark; and George W. Uetz, a professor of biological sciences at the University of Cincinnati; is published this month in *Biology Letters*, a journal of the Royal Society of London.

"Eavesdropping on the communication of others is widespread among animals and often serves as a means of obtaining information. For example, studies of birds, mammals and fish have shown that male bystanders observing male-male contests can learn about the strengths of potential opponents, while female observers may copy the mate choices of others," says Clark, the lead author and co-investigator on the study. "This new discovery shows that male [wolf spiders](#) also eavesdrop on the [visual signals](#) of courting males."

Those visual signals included a leg-tapping mating dance of the male wolf [spiders](#). As part of the research project, the spiders were collected from the wild and observed when placed in a lab with a video of a "virtual" male spider that was sending out courtship signals in a digital

version of a [natural habitat](#). "Video playback has been used successfully in experimental studies of numerous [animal species](#), including spiders," says Roberts, who conducted his doctoral research at the University of Cincinnati.

The researchers found that when it comes to this visual eavesdropping, experience counts. They first observed the trait in the woods during [mating season](#), but previous studies on lab-raised (and therefore naïve) spiders were inconclusive. The field-collected spiders used in this study were likely exposed to male courtship toward females in nature, and as a result, behaved as if their "rival" was courting a nearby female.

"This 'signal matching' behavior has only been seen before in vertebrate animals like birds or fish, and suggests that invertebrates like spiders may have more sophisticated behaviors than previously known," according to senior (corresponding) author and co-principal investigator Uetz. "The closer we look at spiders, the more complex we see they are – their capacity for learning, memory and decision-making is far greater than we ever would have thought."

Provided by University of Cincinnati

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