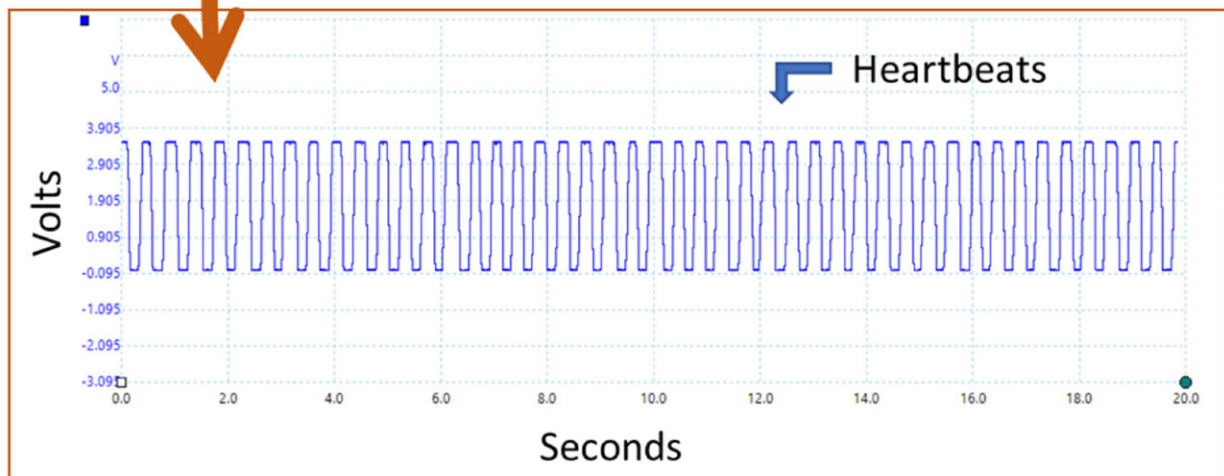
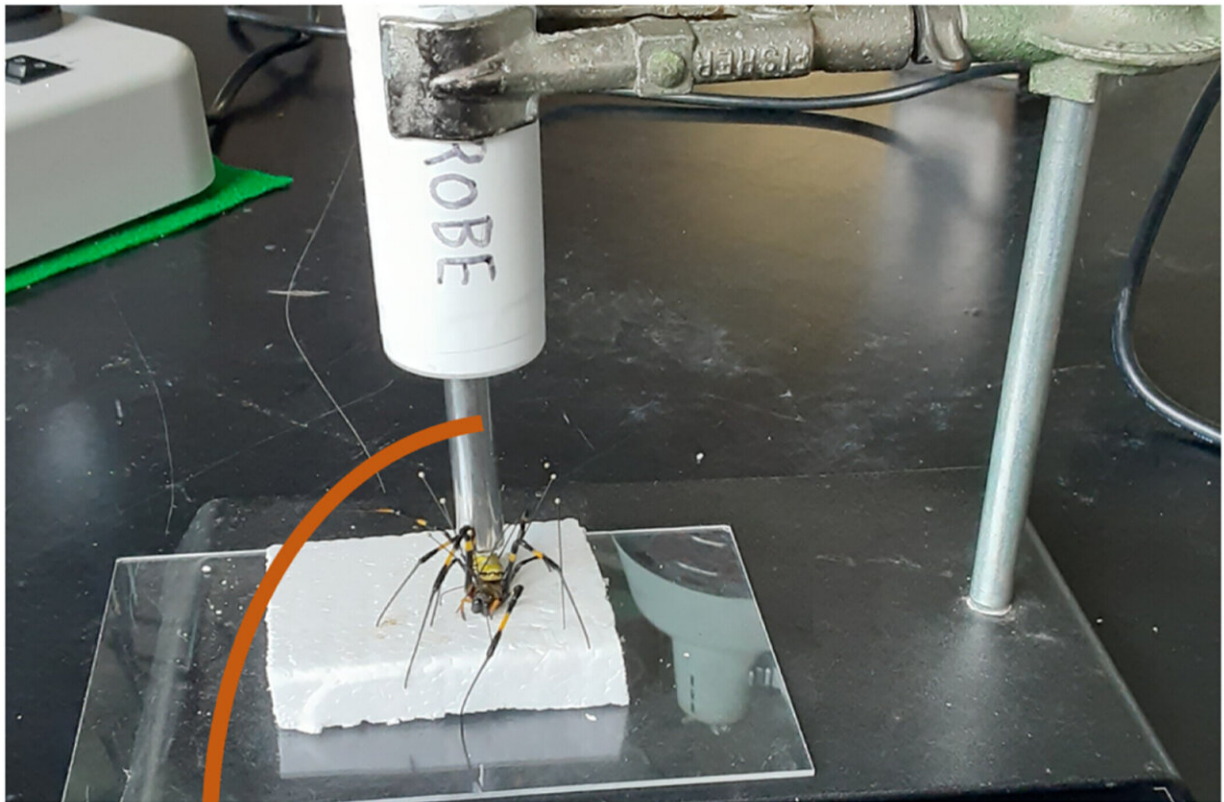


# Lab experiment shows Joro spider heart rates fluctuate less under stress

August 13 2024, by Bob Yirka



Procedure for measuring spider heart rates during restraint. Credit: *Physiological Entomology* (2024). DOI: 10.1111/phen.12463

A pair of entomologists at the University of Georgia has found that Joro spider heart rates fluctuate less when they are experiencing stress compared to similar spiders. In their study, [published](#) in the journal *Physiological Entomology*, Andrew Davis and Christina Vu captured specimens of several spider species and measured their heart rates while exposing them to a stressful situation in a laboratory setting.

Prior research has shown that Joro spiders are native to eastern parts of Asia, but approximately 10 years ago, they made the jump to North America, where they have taken hold. The yellow and black spiders with long legs have been spotted in several southern states, and most in the field expect them to spread across the U.S. and possibly parts of Canada.

Prior research and anecdotal evidence have also shown that the spiders are not afraid of humans and spin their webs on a host of human constructs, including buildings, gas station pumps and street lamps. The spiders do not tend to react to discovery—they simply stop moving and wait for the threat to pass.

In this new study, the researchers wondered what accounts for their tolerance of humans, [weather conditions](#) and even other animals. They measured the spider version of a "heart rate." The spiders have a vessel in their abdomen that pumps hemolymph through their body, much like the heart does in mammals. Prior research has shown that just like in humans, the rate of pumping increases during times of stress. In spiders, the vessel can be observed pumping via a simple microscope, without

having to dissect specimens.

The researchers captured several specimens of Joro spiders and also included orb, garden and banded spiders. All were brought back to the lab for testing. To test the impact of stress on heart rate, the researchers first measured their heart rates during normal activities. They then physically restrained them and then measured their heart rates again while they attempted to escape their bindings.

The researchers found a difference for the Joro spider. All the other spiders had an increased heart rate while they tried to escape, which then fluctuated as the duress continued. The Joro, on the other hand, remained still—its [heart rate](#) also increased, but there was no fluctuation. The rate remained constant until the [spider](#) was released.

The researchers suggest that the lack of fluctuation is likely tied to the spiders' overall lack of fear and apparent lack of concern regarding their own well-being.

**More information:** Andrew K. Davis et al, How to give a spider a heart attack: Evaluating cardiac stress reactions of *Trichonephila* and *Argiope* spiders, *Physiological Entomology* (2024). [DOI: 10.1111/phen.12463](#)

© 2024 Science X Network

Citation: Lab experiment shows Joro spider heart rates fluctuate less under stress (2024, August 13) retrieved 13 August 2024 from <https://phys.org/news/2024-08-lab-joro-spider-heart-fluctuate.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.