

Spiders use pre-tensioned silk to hoist prey off the ground

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A pair of researchers at the University of Trento has found that some spiders use pre-tensioned silk to hoist prey off the ground. In their paper published in *Journal of the Royal Society Interface*, Gabriele Greco and

Nicola Pugno describe experiments with two species of spiders, *Steatoda paykulliana* and *Steatodatriangulosa*.

Prior research has shown that many kinds of spiders are capable of capturing [prey](#) that is much bigger than they are—in some cases, 50 times as massive. But how they do so has not been well studied. In this new effort, the researchers conducted experiments in which they captured video of spiders in boxes to uncover their secrets.

The boxes were just large enough for the spiders to use as a support for [web building](#). Each of the spiders in the experiments was given time to build its web, then the researchers placed a large South American variety of cockroach into the box where it soon became entangled in the bottom part of the [spider's](#) web. And that was when the action began. The researchers found that the spiders would repeatedly spin a length of silk, stretch it slightly, then affix one end of it to the body of the cockroach and the other to an upper part of the web. The spider used its own body weight to stretch the silk like a rubber band. As the spider attached more strands to the cockroach, it was eventually lifted entirely off of the floor, making it impossible to escape. The spider then tied the [cockroach](#) in place, injected it with venom and then waited for it to die so that it could consume its meal.

In taking a closer look at the spider as it went about its business, the researchers found that the spiders pulled the [silk](#) strands to just the right tension—too much, and they would lose their elasticity, too little would mean wasted effort.

The researchers say this is the first time that spiders have been observed capturing much larger prey—and it also demonstrates yet another way that spiders use webs to overcome their comparatively small and light bodies to capture large prey.

More information: Gabriele Greco et al. How spiders hunt heavy prey: the tangle web as a pulley and spider's lifting mechanics observed and quantified in the laboratory, *Journal of The Royal Society Interface* (2021). [DOI: 10.1098/rsif.2020.0907](https://doi.org/10.1098/rsif.2020.0907)

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