

Captured in silken netting and sticky hairs

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The foot of the jumping spider *Euophrys frontalis*, showing the paired claws and adhesive pads. Credit: Wolff

The great ecological success of spiders is often substantiated by the evolution of silk and webs. Biologists of the Kiel University and the University of Bern now found an alternative adaptation to hunting prey: hairy adhesive pads, so called scopulae. The scientists published their results in the May issue of the scientific journal *PLoS One*.

"More than half of all described [spider species](#) have abandoned building webs. They seize their prey directly and have to be able to hold and control the struggling prey without getting hurt themselves", explains Jonas Wolff, PhD student in the working group 'Functional Morphology and [Biomechanics](#)'. But how do these [spiders](#) manage to capture their prey, Wolff and his coworkers Professor Stanislav Gorb, Kiel, and Professor Wolfgang Nentwig, Bern, wondered. In order to find out, they turned their attention to the hairy pads, that grow on the legs of hunting spiders. These pads consist of specialized hairs (setae), which split into numerous branches. With these the setae can cling to surfaces very closely, which is necessary to exploit intermolecular [adhesive forces](#).

"Until now, scientists assumed that the spiders mainly use those sticky pads for climbing on smooth surfaces. The earlier hypothesis that the adhesive pads are important for prey retention received scant attention. Our results show, that abandon web building occurred independently for several times. Interestingly, it was often accompanied by the evolution of similar adhesive pads. Specialized foot pads, which enable the spider to climb steep smooth surfaces such as window panes, are further developments derived from the [prey](#) capture apparatus", Wolff explains. "These results give us entirely new insights on the evolution of spiders."

More information: Wolff, J. O., Nentwig, W. and Gorb, S. N. The great silk alternative: Multiple co-evolution of web loss and sticky hairs in spiders. *PLoS ONE*, In Press.

[dx.plos.org/10.1371/journal.pone.0062682](https://doi.org/10.1371/journal.pone.0062682) (Publication date: 1st May 2013).

Provided by Kiel University

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