

## Just right: A spider's tale

March 25 2015

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A new study by MU biologist Dr. James Carrel shows that southern house spiders are making size-related choices about the holes and cavities in which they build their nests. Credit: James Carrel

In the Story of Goldilocks and the Three Bears, the little girl tries out the bears' large, medium, and small chairs to find the one that fits her best. When she does, she exclaims, "This chair is just right!"

Many animals seek natural cavities that are "just right" for them. The good fit provides protection from enemies and severe weather. For

example, wood ducks and red-cockaded woodpeckers seek right-sized holes in old trees, and [hermit crabs](#) try out snail shells to find one that fits snugly.

Well, it turns out that a cavity-nesting spider does something similar.

A new study from the University of Missouri shows that southern house spiders (*Kukulcania hibernalis*) are making size-related choices about holes and cavities in which to build their nests.

The southern house spider gets its name from its preference for taking up residence in homes, barns, and other man-made structures throughout much of the southern United States. The spider is most often identified by the distinctive web it builds, which radiates outward from a central lair located inside pre-existing holes and crevices on walls, doors, eaves, and other human dwellings.

"We normally think of spiders as living on silken webs or hiding in leaves or under things. But southern house spiders seem to be found only in little holes and crevices up on walls and ceilings and associated with human dwellings," said MU biologist James E. Carrel, author of the study, which appears in the March issue of the *Florida Entomologist* journal.

Carrel, who is a Curators' Distinguished Teaching Professor in the Division of Biological Sciences at MU, has been studying the behaviors of southern house spiders for over thirty years, mainly at the Archbold Biological Station in south-central Florida, where the spiders can be found in abundance. Over time, he began to speculate that the spiders were seeking holes and crevices that more-or-less matched their body size, similar to how hermit crabs trade up for bigger shells as they grow bigger.

To test his hypothesis, Carrel presented 2-, 8-, and 24-week-old spiders with an array of artificial holes to nest in, ranging in size from 1.6 to 7.9 millimeters. After four days, he recorded the hole size each spider chose. He also measured the growth patterns of the spiders.

When presented with a choice of hole sizes, little spiders tended to choose little holes to nest in and bigger spiders selected larger nest hole sizes. The ratio of the diameter of the nest hole and the size of the spider was constant across the three different age groups.

"Spiders tended to choose a hole that was three to four times as big as their own body size, which is big enough for them to get up, move around, go back, hide, and all," said Carrel.

In other words, like Goldilocks, the spiders selected a hole that fit "just right."

Carrel said the findings raise the question of whether populations of these spiders in the wild are constrained by the limited availability of suitably sized nest sites.

"It may be kind of an accident that our houses make perfect homes for these spiders, and so they're exploiting human habitat, and as such their numbers may be thousands of times greater in human structures than they would be out in the wild," says Carrel.

The study, "Growth and nest hole size preferences in immature southern house [spiders](#) (Araneae: Filistatidae): Are they constrained consumers?," appears in the March issue of the *Florida Entomologist*.

**More information:** *Florida Entomologist*,  
[journals.fcla.edu/flaent/article/view/84400](http://journals.fcla.edu/flaent/article/view/84400)

Provided by University of Missouri-Columbia

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