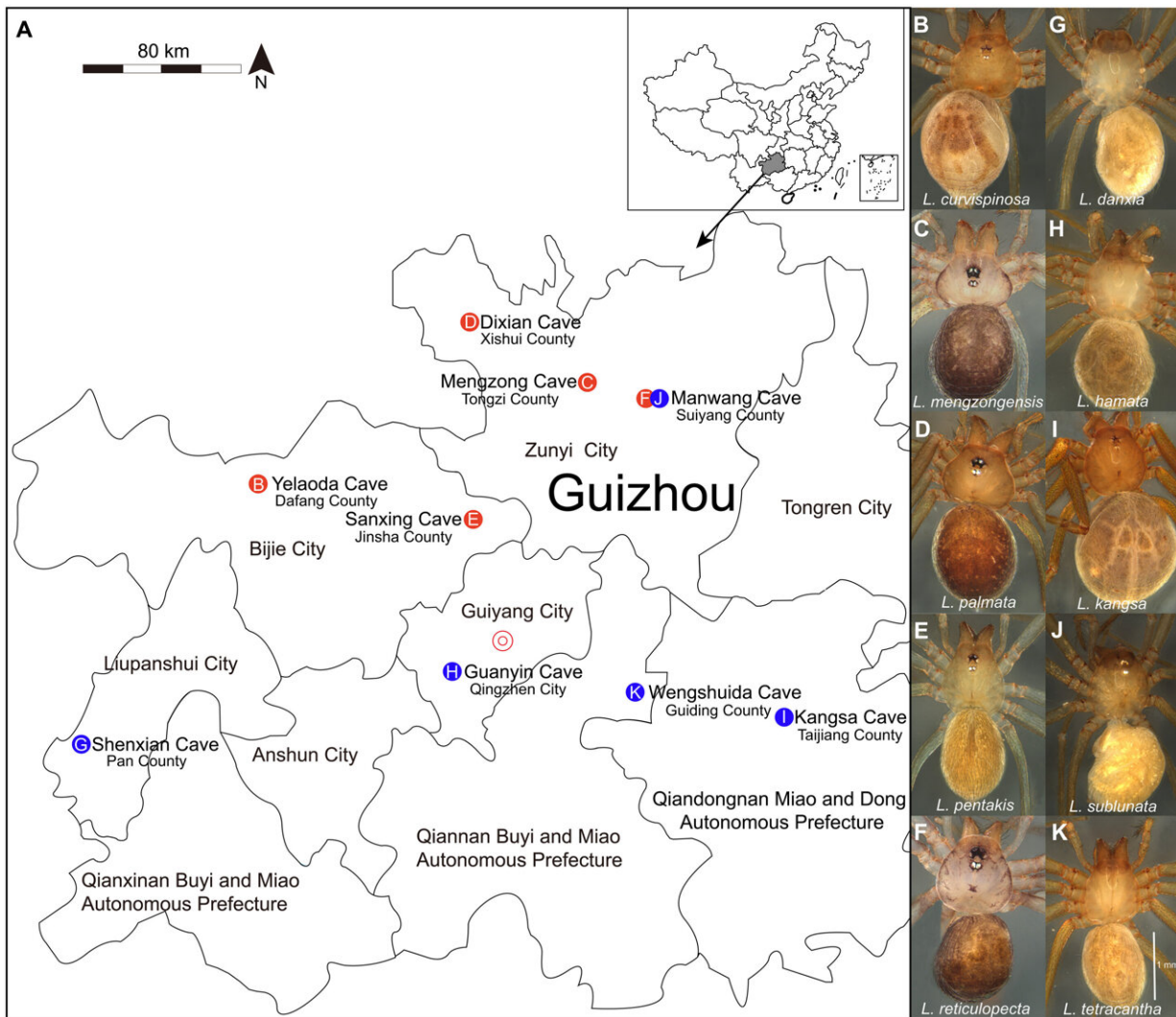


# Blind spiders living in completely dark caves are able to sense light, scientists show

December 21 2023, by Bob Yirka



Collection sites and phenotypes of entrance and cave-dwelling *Leptonetela* species. (A) A map showing the distribution of caves in Guizhou Province, China; red and blue circles separately indicate the collection locations of

entrance and cave-dwelling *Leptonetela* species. (B to F) Phenotypes of five entrance *Leptonetela* species (*L. curvispinosa*, *L. mengzongensis*, *L. palmata*, *L. pentakis*, and *L. reticulopecta*). The images display the recognition of six intact eyes with completely eye pigment in five entrance species. (G to K) Phenotypes of five cave-dwelling *Leptonetela* species (*L. danxia*, *L. hamata*, *L. kangsa*, *L. tetracantha*, and *L. sublunata*). The images show highly reduced eyes with only six white spots in two cave-dwelling species [(I) and (J)] and the completely absence of peripherally detectable eyes in three cave-dwelling species [(G), (H), and (K)]. The scale in (K) could be applied to all images. Credit: *Science Advances* (2023). DOI: 10.1126/sciadv.adj0348

A team of environmental scientists at Hubei University, in China, working with a colleague from the University of Iceland, has found that blind spiders living deep within caves in China are still able to sense light and respond to it. In their study, [reported](#) in the journal *Science Advances*, the group tested two groups of spiders that live in southwestern China's cave systems.

Prior research has shown that [species](#) of creatures that live in [caves](#) where there is no light tend to lose their ability to see over time. Some lose their eyes altogether as evolution favors other characteristics in such extreme environments. Prior research has also shown that despite losing their eyes, some cave dwellers are still able to sense light, often to avoid it. In this new study, the research team wondered if that might be the case for *Leptonetela*, a genus with many species of tiny, blind or nearly blind spiders that live in dark caves.

The researchers noted that some species of *Leptonetela* live near the mouth of a cave, and have six eyes rather than the customary eight eyes of non-cave-dwelling *Leptonetela*—the two eyes they have lost are generally used to find prey. Other species of *Leptonetela* live much deeper in the caves and have lost their ability to see, and in some cases,

have lost their eyes altogether.

To find out how both species respond to light, if at all, the research team collected 10 examples from each group and took them back to their lab for study. All the spiders were placed into containers that were split into light and dark halves. The spiders were able to move freely between the sides.

The researchers found that all spiders from both groups kept to the dark side of the enclosure. This, they suggest, shows that all of them are capable of sensing light, regardless of whether they have eyes or not. They also found that all of them had genes that are known to play a role in responding to light.

The researchers conclude that the reason the spiders retain the ability to sense light is because they need to avoid the dry air close to the mouth of a [cave](#). Testing showed that the completely blind spiders could not survive in such a dry environment.

**More information:** Kai Wang et al, Eyeless cave-dwelling *Leptonetela* spiders still rely on light, *Science Advances* (2023). [DOI: 10.1126/sciadv.adj0348](#)

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