

Como vuelan las arañas.

How Spiders fly

By James Gorman and Christopher Whitworth

Spider flight is a mysterious phenomenon not fully understood by science. How is it that spiders can ride the wind for miles at a time←Published On June 26, 2018
Credit Image by Moonsung Cho



By James Gorman

Sometimes spiders ride the wind. They spin out lines of silk that are caught by the breeze and carry them aloft. They have been reported to rise a mile or two above the earth, and perhaps even to cross oceans.

It's called ballooning.

Moonsung Cho, an aeronautical engineer, was in Denmark the first time he saw the flight of a spider. It was autumn, when baby spiders often balloon en masse and spread to new areas.

He was completely taken by the phenomenon and made it the subject of his studies toward a doctorate at the Technical University of Berlin.

The flights of spiders are well known, but not their physics, so Mr. Cho tested crab spiders both in nature and in a wind tunnel, and discovered, among other things, what holds the spiders up in the air.

They don't actually have balloons, but rather numerous strands of silk that they spin up to six feet long. And those threads of silk, from 100 to a few hundred nanometers wide (a human hair is 80,000 to 100,000 nanometers in diameter), are so thin and lightweight that they are suspended in the air like a thread, or a hair, in molasses.

Compared to a silk thread, the air is like a thick fluid, so the effect of gravity is easily counteracted by what you might call the stickiness of the air. In a breeze, the flowing air carries the silk threads along with it, as the spider rides beneath.

Mr. Cho and his colleagues also reported that the spiders actually test the wind, raising a foreleg to judge how strong it is. They prefer a mild breeze, about seven miles per hour.

Beyond pure physics, Mr. Cho has learned a great deal from them in the five years he's been studying them. Spider flight has been known for the longest time, he said, but still had secrets to yield.

It may seem that nature has been fully explored by science, but "we need to change our viewpoint," he said. "There are a lot of things which we don't know. "