In a new experiment, scientists found castor bean ticks (Ixodes ricinus) are so tiny that static electricity vaults them through the air.
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New anxiety unlocked: Ticks can 'fly'

Ticks can’t jump. But thanks to the forces of static electricity, sometimes, the arachnids can soar through the air, a new study says.

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In news absolutely no one wants to hear, scientists have just discovered that ticks can fly short distances through the air, thanks to the gravity-defying forces of static electricity.

These arachnids are parasites, which means they cannot survive without drinking the blood of larger animals.

“Finding that host is kind of the most important moment in their life,” says Sam England, a biologist and postdoctoral researcher at Berlin’s Natural History Museum.

At the same time, ticks have a problem. They can’t jump, and they can be extremely tiny—sometimes no larger than a poppyseed on a breakfast muffin.

On top of this, many tick species are sedentary, which means they climb a blade of grass and wait for their host, hooked leg outstretched. When a deer, sheep, or even mouse wanders by, the tick must latch on in an instant. *(How parasites keep our ecosystems together.)*

But with static electricity as a secret sidekick, it seems some ticks may get an extra boost in reaching their hosts, according to a recent study in the journal *Current Biology*.

Using wild-caught castor bean ticks (*Ixodes ricinus*), whose females are a significant vector for Lyme disease transmission in Europe, England and his co-authors showed that one-millimeter-size tick nymphs held up by forceps could shoot their bodies several centimeters through the air when exposed to static electricity.

"We saw it immediately," says England, whose study was completed as a Ph.D. student at the University of Bristol in the United Kingdom. "That's probably the first and last time that's ever going to happen to me in science—an experiment works literally the first time."

With better knowledge of how these animals attach to hosts, England believes the discovery could yield a new generation of anti-tick sprays or tick-repellant outdoor materials.

How static electricity makes ticks "fly"

As animals travel through the grass, sand, and even air, the friction of their movements creates electrical charges, explains England. They're either positive (carried by protons), or negative (carried by electrons). "And if they're the opposite polarity, they'll be attracted to each other. And if they're the same polarity, they'll be repelled from each other."

Many of us know static electricity as what happens when you rub a balloon on your head, causing your hair to stand upright.

With an object as small as a tick, those same electrical forces can be enough to lift the parasite off the ground entirely. *(Learn how some ticks make "cement" to attach to your skin.)*

VIDEO - https://youtu.be/ab_VR3ER0iw

In the lab, scientists created friction by rubbing a dried rabbit foot on a plastic sheet of acrylic, creating opposing charges on both materials. They then held the ticks in stainless steel forceps at varying distances from either the rabbit foot or acrylic. Once the forceps released, the team watched in awe as all the nymphs vaulted up toward the charged surfaces.

Interestingly, the scientists found the ticks could launch through the air when exposed to both positive and negative charges, suggesting that these natural forces overwhelm whichever charge the tick has on its own body. The experiments also showed that a tick can move through the air vertically, which is more difficult than horizontally—the more typical direction for a tick in search of a host.

"Basically, attraction always wins, and they get pulled up," England says.

While the current study focused on tick nymphs, the forces in play here would also work for adult ticks, as well as similarly sized animals, such as lice or mites. *(Read how spiders can fly for hundreds of miles.)*

In fact, another recent study found evidence that nematodes can use static charge to zoom onto bumblebees, which they use to hitch rides to new areas.

"So their study combined with ours really does make the point that it could be quite a widespread phenomenon," says England.

Ticks wanted?

Maria Diuk-Wasser, a disease ecologist at Columbia University in New York, has an unusual job: She actually seeks out ticks.

"Us tick collectors are always looking for materials that collect more ticks, which is the opposite of what most people would want," she says. *(Read how to keep ticks out of your backyard.)*

To collect ticks for research, Diuk-Wasser and her colleagues drag corduroy sheets across vegetation. However, the new study has her wondering if another material more prone to static might vacuum up greater numbers of the parasites she seeks.

Diuk-Wasser says that ticks traveling by way of static electricity is "unexpected" and "quite cool."

"I'm not sure they've evolved to use this as a strategy," she says, "but it's something that works in their favor, let's say."

Likewise, Diuk-Wasser says it's unclear if the ticks can sense electrical charges, or if they're just getting lucky.

"We know really very little about how they sense the host, and what that range is, especially," she says. "It's definitely possible. But I think it's worth exploring further."