



Biology: uniformity and diversity

Spiders: Galloping spiders

Narrator

Spiders can move much faster across water. A clue to how they do it comes from the way they leap in response to an environmental stimulus.

Bob Suter

Spiders when they jump from the water surface are still using the resistance of the water to get their propulsion of the water surface. But they push their legs down so fast and so hard, that the dimple that forms when an animal is rowing is gone. So when they push down like that, it's no longer a dimple. It's still bound by air, because the leg can't get wet. But it pushes down so hard that the resistance comes just from the drag of the water against the skinny little leg tip that's getting pushed down. As you can see they can still get quite high, maybe 4cm or so above the water surface. And can be up there for a third of a second or so. Sitting still, jumps, comes back and hits the water surface and then gallops away. Galloping away is doing the same thing in terms of the biomechanics of it as jumping is. Galloping and jumping are still pushing their leg down through the water, getting their thrust that way. What you are about to see is a jump and as she's going, she's just galloping off. And what's really good about that I think, this particular shot, is you get to see how much of the time she's off the water surface. So now off, hits off, hits again. So it's galloping just the way a horse does. Touching the ground part of the time. Airborne part of the time. And because it's airborne part of the time, during that time it's not slowing down, or not appreciably. So now it slows down but gets its propulsion and is now airborne still getting quite a high rate of speed. So a galloping spider can go much faster than a rowing spider.

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