

The New York Times

It's Not a Bird or a Plane. It's a Skydiving Salamander.

With the greatest of ease it twists and turns from the tops of redwood trees.



The graceful gliding of the wandering salamander in a wind tunnel. Video by Roxanne Makasdjian/Christian Brown.



By [Nicholas Bakalar](#)

May 26, 2022, 10:00 a.m. ET

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Flying salamanders? Well, not quite, but there is a species called the wandering salamander that lives in the tallest trees on earth, and can do a very convincing imitation of flight, parachuting from great heights on its way down to another branch, another tree or the ground.

There are other animals without wings that can coast safely through the air. The flying squirrel may be the archetype, and some [spiders](#), [lizards](#) and [frogs](#) can sail through the air and come in for a soft landing. Most have obvious control surfaces — the skin flaps of the flying squirrel are a good example. But wandering salamanders, which live in the tops of California redwoods, look almost identical to closely related species that never go airborne.

In [a study published Monday in Current Biology](#), researchers tested the skills of arboreal and ground-dwelling salamanders using a wind tunnel to simulate flight from the tops of trees.

“We climb trees to study them,” said Christian E. Brown, a doctoral candidate in biology at the University of South Florida and an author of the study, “but [studying the flight is difficult in nature](#), almost impossible. For that, we needed the wind tunnel.”

Even in the laboratory, working with the animals presents problems.

“They just jump out of your hands,” Mr. Brown said. “We had to slow things down, and the wind tunnel is safer for the animals as well. We had vets checking on them between trials, and we did three trials a day with each animal, no more. It took many weeks to get to 45 trials.”

They gently dropped a non-arboreal species into the tunnel, and watched it tumble head over heels to the bottom.

Video



Another species of salamander was less graceful in the wind tunnel. Video by Roxanne Makasdjian/Christian .Brown.

But when a wandering salamander slipped from a researcher's hand into the tunnel, it extended its legs as soon as it felt the breeze, stayed perfectly upright, glided up and down with the stream of air and turned gracefully, apparently very much at ease while defying gravity. These are useful skills for an animal that lives at the top of a 250-foot tree.

Wandering salamanders have some physical characteristics that could contribute to their gliding ability. Their bodies are slightly flatter than those of non-arboreal species, and their limbs are long. Their large feet and long toes form concave surfaces that may function as a kind of parachute, slowing their fall through the air.

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But these bodily features do not completely explain their remarkable ability to twist and turn to slowly change direction, control their speed and maintain an upright posture.

“They can make moves and spin on a dime,” Mr. Brown said.

The flight controls appear to be the legs and tail. When the researchers dropped the wandering salamanders into the wind tunnel upside down or backward, they could immediately whip their tails around and spin into an upright position. When they tuck the back right leg in, the body pivots around that leg. They can assume postures that change their speed. Still, exactly what makes the animal capable of these moves remains a mystery.

Watching a film of the wandering salamander floating and hovering like an astronaut aboard the space station leaves the impression that the animal is having a very good time. Is it?

“We can’t interview them,” Mr. Brown said wistfully, “and it’s hard to know what a salamander is thinking.”