

Brazilian free-tailed bat is the fastest flyer in the animal kingdom

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Bats leaving the Frio Cave. Credit: Gary McCracken

Up to now, the speed record for horizontal flight was held by birds from the swift family: the common swift, for example, can reach speeds of

over 100 kilometres per hour. Together with colleagues from the USA, researchers at the Max Planck Institute for Ornithology in Radolfzell have now discovered a new front-runner among the acrobats of the air. However, the animal involved here is not a bird but a bat: the Brazilian free-tailed bat shoots through the night skies at over 160 kilometres per hour. Their aerodynamic body shape and longer than average wings compared to other bat species enable them to reach such vast speeds.

Birds are still a model for aviation engineers today and remain unequalled when it comes to flight characteristics. While birds can take off at comparatively low speeds, even the most modern aircraft must reach a speed of around 300 kilometres per hour to be able to lift off. The main contributing factors here are the animals' aerodynamic, projectile-like body shape and their low weight due to special bones. Moreover, the narrow wings found in faster-flying species also enable greater lift relative to the aerodynamic force invested.

Swifts, like the common swift (*Apus apus*), which can reach speeds of 110 kilometres per hour, are considered the fastest birds in the world at horizontal flight. Peregrine falcons can even reach speeds of up to 300 kilometres per hour when diving. In contrast, due to their wing structure, [bats](#) generate greater resistance, and are generally considered slower flyers.

Animals with long and narrow wings usually fly faster than those with shorter and wider ones. For this reason, the scientists selected the Brazilian free-flying bat (*Tadarida brasiliensis*) for their study. Even the experts themselves were surprised by their results: "Initially, we could hardly believe our data, but they were correct: at times, the female bats, which weigh between 11 and 12 grams, flew at speeds of over 160 kilometres per hour – a new record for horizontal flight," says Kamran Safi from the Max Planck Institute for Ornithology.

The data on the bats' flying speeds were collected using a radio transmitter weighing just half a gram and attached to the their backs using an adhesive and fell off after two to five days. Its regular beeping signal was localized using a mobile receiver installed on a small aircraft. "It was not easy for the pilot to follow the fast-flying animals so that we could localize them accurately and measure their flight path continuously," explains Dina Dechmann. The scientists also evaluated the data recorded by the closest weather station and noted the wind conditions at the time of the studied flights. "External factors like landscape and tailwinds cannot explain these results, as they had no impact on the maximum speeds," says Dechmann.

More information: Airplane tracking documents the fastest flight speeds recorded for bats. *Royal Society Open Science* 3: 160398. [DOI: 10.1098/rsos.160398](https://doi.org/10.1098/rsos.160398)

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