Mosquitoes surf out of your hand's way

When you try to slap a mosquito in flight with your hand, it escapes by surfing the resulting airflow. This finding comes from researchers of Experimental Zoology and the Laboratory of Entomology.

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We all know how difficult it is to swat a mosquito zooming around your bedroom at night. According to researcher Antoine Cribellier, mosquitoes regularly escape thanks to their sharp senses and rapid reactions. The airflow that is generated plays an important role in the process. For example, he showed that a perforated fly swatter has twice as much chance of 'making contact' than a fly swatter without perforation. That confirms the widely held assumption that it is easier to swat a mosquito with a fly swatter with holes than with your bare hand.

He also found that a mosquito's escape manoeuvre consists of two stages. When a threatening object approaches, first the mosquito makes a sharp turn and flies away from the attacker. Then it is passively pushed away by the airflow.

To carry out this study, the researchers used high-speed cameras that record 12,500 images per second. They are needed to capture the details of the movement of the mosquito wings, which beat approximately 500 times a second.

AI image recognition software was used to analyse the video images of almost 500 escape manoeuvres. 'Combining these measurements with simulations of the airflows let us estimate the aerodynamic forces generated by the airflow and by the mosquitoes themselves,' says Cribellier. The research was published in March in *Current Biology*.

In future studies, the team wants to find out which sensors – such as sensitive hairs or antennae – mosquitoes use to detect the incoming airflow. They also want to investigate how this new knowledge can be used to improve traps that use airflows to catch mosquitoes.

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