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**Mosquito flight failure in heavy fog** ANDREW DICKERSON, Georgia Institute of Technology, LUKE TELLJOHANN, None, LEE-ELLEN THORNTON, CAITLIN MOYER, DAVID HU, Georgia Institute of Technology — Mosquitoes thrive during rainfall and high humidity. We previously found that mosquitoes are successful fliers through rainfall. Heavy fog, consisting of drops three orders of magnitude smaller in mass than raindrops, presents an environment in which mosquitoes cannot maintain flight. Through high-speed videography, we observe mosquitoes reduce wingbeat frequency in heavy fog, but retain the ability to generate sufficient force to lift their bodies, even after significant dew deposition. They are unable, however, to maintain an upright position required for sustainable flight. A mosquito's primary flight control mechanism is its halteres, small knobbed structures evolved from the hind wings, which flap anti-phase with the wings and provide gyroscopic feedback through Coriolis forces. Though the halteres are hydrophobic, repeated collisions with 10-micron fog particles hinders flight control, leading to flight failure.

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