



Communication and Marketing Department
Isebe loThungelwano neNtengiso
Kommunikasie en Bemakingsdepartement

Private Bag X3, Rondebosch 7701, South Africa
Welgelegen House, Chapel Road Extension, Rosebank, Cape Town
Tel: +27 (0) 21 650 5427/5428/5674 Fax: +27 (0) 21 650 5628

www.uct.ac.za

15 October 2025

UCT researchers reveal humidity's deadly role in bird deaths during heatwaves



UCT Blue waxbills drinking at Pongola Game Reserve – the site of South Africa's first documented heat-related mortality event involving wild birds, which occurred in late 2020.

Photo: Marc Freeman

A collaborative [study](#) by the University of Cape Town (UCT), the University of Pretoria (UP), the University of the Witwatersrand and the South African National Biodiversity Institute has found that high humidity significantly exacerbates the threat of lethal hyperthermia in small birds during extreme heat events. The findings raise serious concerns about the survival of species in hot, humid regions under climate change and highlight the importance of South Africa's leading research institutions collaborating to understand and address climate risks to biodiversity.

"These findings highlight that the impacts of climate change on wildlife are not just about rising temperatures, but also about how heat and humidity interact to push animals beyond their physiological limits," said co-author Associate Professor Susan Cunningham, Director of UCT's [FitzPatrick Institute of African Ornithology](#). "This has profound implications for predicting which species and ecosystems are most at risk, and for planning effective conservation responses."

The study, "*A heat-sensitive songbird's risk of lethal hyperthermia increases with humidity*", published in the [Royal Society journal *Biology Letters*](#), underscores UCT's leadership in global climate and biodiversity science, building on decades of work by the FitzPatrick Institute to understand how Africa's wildlife is adapting to a warming world.

Researchers studied blue waxbills (*Uraeginthus angolensis*), the small songbirds most affected in South Africa's first documented heat-related mortality event involving wild birds, which occurred in late 2020. By measuring the waxbills' ability to tolerate heat under both dry and humid conditions, the team found that humidity significantly reduced the birds' capacity to cool themselves through evaporation.

In dry air, waxbills could withstand air temperatures of up to nearly 48 °C. But in humid air, their heat tolerance limit dropped by more than 2 °C, to just 45.7 °C – the same conditions recorded during a deadly heatwave in KwaZulu-Natal in 2020, during which dozens of birds and bats perished.

"Our findings show that humidity is a critical but often overlooked factor in predicting climate-driven bird mortality," said lead author Nazley Liddle, a masters student at FitzPatrick Institute's Department of Science and Innovation-National Research Foundation (DSI-NRF) Centre of Excellence. "By the end of the century, the risk of fatal overheating for waxbills could be three to seven times higher in some parts of southern Africa once humidity is factored in."

The results suggest that many small birds in hot, humid environments worldwide may be more vulnerable to mass die-offs than previously thought. This insight challenges existing conservation models, many of which focus only on temperature and overlook the combined stress of heat and humidity.

"Humidity limits evaporative cooling, leaving birds with dangerously narrow safety margins," explained senior author Professor Andrew McKechnie from UP. "As climate change intensifies, more areas could become uninhabitable for small songbirds, including the eastern lowlands of southern Africa."

The study reinforces the call for climate adaptation strategies that incorporate humidity into wildlife vulnerability models, supporting the development of targeted conservation responses to safeguard biodiversity in changing climates.

Issued by: UCT Communication and Marketing Department

Velisile Bukula

Head: Media Liaison
Communication and Marketing Department
University of Cape Town
Rondebosch
Tel: 021 650 2149
Cell: 071 642 3495
Email: velisile.bukulai@uct.ac.za
Website: www.uct.ac.za

