

Tropical beetles face extinction threat

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Climate change is putting many tropical high altitude beetles at risk of extinction, warn an international team of scientists.

Research by the University of York, the Federal University of Rio de Janeiro (UFRJ) and the Federal University of Goiás has found that two plant-eating beetle groups - weevils and leaf beetles - are particularly vulnerable to [climate change](#).

The researchers surveyed a number of insect groups at different altitudes in the Brazilian Atlantic Rainforest, an area known for its high diversity of plant and animal species.

They found that a large proportion of species, mostly from the diverse herbivorous beetle groups, are only found at higher altitude. This puts these species at [high risk](#) of extinction as they have nowhere to go when the [climate](#) gets warmer.

Dr Peter Mayhew, of the University of York's Department of Biology, one of the investigators, said: "Previous research has shown that species are moving uphill as the climate warms and that tropical mountain species may be particularly vulnerable because they will become restricted to smaller and smaller areas in a warming planet.

"Our study showed that the most diverse herbivorous beetle groups - the weevils and leaf beetles - are highly specialised to high altitudes, which means their favoured temperatures may disappear in a warmer world. This puts them at high risk of extinction."

The study was carried out in the Serra dos Órgãos National Park in the state of Rio de Janeiro in Brazil and the results published in the journal *Insect Conservation and Diversity*.

Insects make up the most diverse group of species in rainforests, but until now little was known about how various insects might be affected by climate change.

Professor Margarete Macedo, one of the research leaders at the Federal University of Rio de Janeiro (UFRJ), said: "Almost nothing is known about elevational specialisation in tropical rainforest insects and our aim was to see how different insect groups varied. This in turn may indicate their risk of extinction from climate change."

The researchers sampled 697 species of insects, using many different trapping techniques such as sticky traps, pitfall traps and tent-like 'Malaise' traps. They discovered that 32 per cent of the species sampled were only found in the highest vegetation zones.

Dr Vivian Flinte, from UFRJ, did much of the collecting, sorting and identification. She said: "It has been a huge team effort over many years to get the data we have now, but we have only just skimmed the surface of what is out there."

Dr Mayhew added: "Even though the area we studied is in a national park, the species in it are not protected from climate change. Because most of these [species](#) are poorly known, their [extinction](#) may largely go undocumented, but we will have lost them nonetheless. It makes it all the more important to limit future climate change as much as possible."

More information: Margarete V. Macedo et al, Insect elevational specialization in a tropical biodiversity hotspot, *Insect Conservation and Diversity* (2017). [DOI: 10.1111/icad.12267](https://doi.org/10.1111/icad.12267)

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