

'Alien' wasps thriving in tropical forests, study finds

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One of the Darwin wasps captured in the study, *Dolichomitrus megalourus*. Credit: Isamara Santos

Researchers say they have discovered a high diversity of Darwin wasps in a tropical rainforest in Brazil, wasps which were previously thought to thrive more in cooler habitats.

The [wasps](#), which survive by living off host insects and spiders until adult-sized, were discovered on a mountain in the Brazilian Atlantic Rainforest. The number of types found were similar to that previously found in the whole of the UK.

The latest findings add to a growing body of evidence that debunks the widely held belief that the Darwin wasp does not thrive in tropical environments and points to the possibility of many wasp [species](#) unknown to researchers in the past.

Researchers say it also provides further evidence of the biodiversity of the Brazilian Atlantic Rainforest and the significance of protecting and restoring the land from the effects of climate change and damage caused by human activities.

The level of diversity in a group of species changes depending on where they live, yet for invertebrates, some of the most diverse species on Earth, little is known about how much diversity can change from one location to the next.

This can hinder [conservation efforts](#), which is increasingly needed to maintain biodiversity in some of the world's most threatened areas, such as rainforests.

Researchers at the University of York surveyed a group of Darwin wasps, a very diverse and important invertebrate group worldwide, on a mountain of the Brazilian Atlantic Rainforest to understand how

common it was in a tropical environment and how it contributed to the region's biodiversity.

Dr. Peter Mayhew, from the University of York's Department of Biology, said, "For a long time it was believed that Darwin wasps favored more moderate climates, but recent reports of their diversity in tropical locations started to prompt questions about this assumption. They can be found in varying numbers on every continent of the world, apart from Antarctica, so they are a particularly fascinating creature."

"We found high biodiversity of the species at mid and low altitudes of the mountain but not at [high altitudes](#), which gives us some guidance on where to concentrate conservation efforts for this population, but it was a surprise to see the level of diversity over the six months of our survey."

"Of the type of wasp we looked at, there are 1,700 described species worldwide and about 109 in the UK. On just one mountain in the rainforest, we found 98 species of these wasps, three-quarters of which could not be named. As our work continues we may well be able to name some of them, but there is a strong likelihood that many will be species we have not encountered before."

The wasps reproduce by parasitizing other insects and spiders until they are adult-sized, and as such they are most vulnerable to human threats, which will reduce the number of insects they can choose from as host bodies. They are important to biodiversity as they kill their host insect, keeping insect populations regulated and allowing many species to coexist.

It is thought that wasps that parasitize other insects, such as the Darwin wasp, could be more diverse than beetles. Around 80,000 parasitic wasp species have been described, but they require more study to understand how their populations survive across a wide range of global

environments.

Researchers hope these latest findings will contribute towards campaigns to reduce deforestation in the [rainforest](#) region and put in place conservation programs that include this highly diverse group of species.

The research is published in the journal [Insects](#).

More information: Vivian Flinte et al, Variation in a Darwin Wasp (Hymenoptera: Ichneumonidae) Community along an Elevation Gradient in a Tropical Biodiversity Hotspot: Implications for Ecology and Conservation, *Insects* (2023). [DOI: 10.3390/insects14110861](https://doi.org/10.3390/insects14110861)

Provided by University of York

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