

Climate change just one of many risks to trees in the tropical Andes

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Scientists have provided the first robust assessment of climate change impacts on extinction risk in the tropical Andes, an area of global importance for biodiversity.

Bournemouth University experts have analysed the potential impact of changing [climate conditions](#) on the tree [species](#) that occur in the tropical Andes, along with other factors.

The Intergovernmental Panel on Climate Change (IPCC) has estimated that 20–30% of the world's species are likely to be at increased risk of extinction as a result of climate change. Other estimates have suggested that 15–37% of species could be 'committed to extinction' owing to climate change by 2050. However, such estimates have been controversial, owing to doubts about the extent of climate change that might occur, and how species may respond to such changes.

The study focused on trees that are restricted to the highest elevations in these mountains, occurring in upper montane forest and cloud forest ecosystems. "Species living at the top of tropical mountains are thought to be among those most at risk of climate change", said Natalia Tejedor-Garavito, who led the investigation. "While species in lowland areas can potentially migrate as the climate changes, those that live on the mountain tops literally have nowhere else to go".

Some 129 species of tree that are endemic to this region were assessed as a part of the study.

Results indicated that climate change increased the risk of extinction of 18-20% of these species, depending on the climate scenario adopted. The researchers also used a new metric that enables quantification of this risk, relative to other pressures affecting [biodiversity](#).

Based on the IUCN (International Union for Conservation of Nature) Red List of Endangered

Species, the Red List Index indicated that climate change accounts for about a 15% increase in extinction risk for this group of species.

"This research shows that while climate change is certainly an important threat to species, there are many other factors that are currently increasing the [extinction risk](#) of species in montane tropical forests," said Professor Adrian Newton of Bournemouth University, one of the researchers involved in the study. These factors include clearance of forest for agriculture and over-harvesting of tree species, as well as the effects of fire and grazing associated with agricultural activity.

The study's conclusion suggests that conservation efforts need to address the multiple factors currently affecting biodiversity, rather than focusing exclusively on climate change. "Tropical montane forests are special places, with high numbers of species that are found nowhere else", said Tejedor-Garavito. "Our concern is that if efforts to conserve them are not strengthened as a matter of urgency, then many species may be lost before longer-term threats such as [climate change](#) really begin to take effect".

More information: "The Relative Impact of Climate Change on the Extinction Risk of Tree Species in the Montane Tropical Andes." *PLoS ONE* 10(7): e0131388. [DOI: 10.1371/journal.pone.0131388](#)

Provided by Bournemouth University

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