

World's cloud forests 'headed for destruction'

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Many of the world's rarest and richest forests – its high-altitude cloud forests – could be all-but obliterated by 2080 due to the combined impact of man-made climate change and habitat destruction.

Writing in the journal *Nature* [Climate Change](#) an international scientific team has warned of the near-total loss of one of the world's most delicate ecosystems, the Mexican cloud forest, along with 70 per cent of its plant and animal species, as a result of human pressures.

“Cloud forests occur only at certain high altitudes and their species are exceptionally vulnerable to the loss of the cool, moist environment that sustains them,” explains lead author Rocio Ponce-Reyes of Australia's ARC Centre of Excellence for Environmental Decisions (CEED) and The University of Queensland.

“Habitat loss and degradation by human encroachment are the main threats to cloud forests around the world at the moment,” says Ms Ponce-Reyes.

“However, given the narrow environmental tolerance of cloud forests, the fear is that human-induced climate change could constitute an even greater peril in the near future.”

She and her colleagues decided to test whether this was so by investigating the specific impact of future global warming on Mexico's 17,274 square kilometres of cloud forest.

They concluded that only about 5557 sq kms would survive.

When they factored in the impact of potential human forest clearing and land use, the surviving area was whittled down to a mere 1 per cent of its present extent – just 151 sq kms.

“At present only about 12 per cent of Mexico’s cloud forest is protected – and it is not clear how effective that protection will be by the latter part of this century,” Ms Ponce-Reyes says.

“Immediate action is required to minimize this loss—expansion of the protected-area estate in areas of low climate vulnerability is an urgent priority,” the international scientific team declared.

They identify as a particular priority for rescue the cloud forest at the Sierra de Juárez in Oaxaca. This supports 22 of Mexico’s most endangered species and is expected to retain relatively large fragments of cloud forest despite rapid climate change, if only it can be protected.

While Australia has no cloud forest, the same fate could befall its highly diverse temperate rainforests in North Queensland, says CEED director Professor Hugh Possingham.

"On tops of mountains, the Wet Tropics rainforests are cool and temperate unlike the tropical forests below them. Like Mexico’s cloud forests, they harbour a highly specialised flora and fauna that occurs nowhere else in the world.

"Fortunately, the clearing of such forests has all but stopped leaving climate change as the only, but still significant, threat," he says.

The world is currently losing about 1.1 per cent of its total estate of cloud forest every year due to timber felling and land clearing alone:

global warming is likely to redouble the rate of loss.

As there are no new cool, high, moist areas to which species can readily migrate, the scientists caution that loss of most of the world's cloud forests is all but unavoidable in the absence of radical efforts by humanity to remove carbon from the atmosphere.

However, at present global carbon emissions are continuing to rise at the highest rate allowed for in the global climate scenario of the International Panel on Climate Change (IPCC), pointing to overall warming of +5-6 degrees Celsius by 2100.

“If bold measures are not taken very soon to reduce the concentration of greenhouse gases, these forests are unlikely to survive in their present form, with anything near their present diversity, very far into the twenty-first century,” the scientists warn.

More information: Their article “Vulnerability of cloud forest reserves in Mexico to climate change” by Rocío Ponce-Reyes, Víctor-Hugo Reynoso-Rosales, James E. M. Watson, Jeremy Van Der Wal, Richard A. Fuller, Robert L. Pressey and Hugh P. Possingham appears in the latest issue of the journal *Nature Climate Change* at (www.nature.com/nclimate/index.html)

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