

Can biodiversity persist in the face of climate change?

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Studies of likely survival rates of alpine plants have highlighted the difficulty of predicting the fate of biodiversity.

(PhysOrg.com) -- Predictions made over the last decade about the impacts of climate change on biodiversity may be exaggerated, according to a paper published in the journal *Science*.

Oxford University researchers, Professor Kathy Willis and Dr Shonil Bhagwat, argue that predicting the fate of biodiversity in the face of [climate change](#) is 'fraught with caveats and complexities'.

They say that several larger-scale models are failing to take into account local, more detailed variations and that models often underestimate the full capacity of plants and [animals](#) to adapt to a changing climate.

The researchers' view is that these factors 'seriously alter the model predictions'. They suggest that 'we should expect to see species turnover, migrations, and novel communities, but not necessarily the levels of extinction previously predicted'.

Their synthesis of research highlights the contradictions in previous studies about the likely survival rates of alpine [plants](#) in the Swiss Alps, European butterfly populations and the South American tropical rainforests.

'These studies highlight the level of complexity that we are faced with in trying to model and predict the possible consequences of future climate change on biodiversity,' the paper says. The researchers say the mixed picture that is emerging from previous studies also emphasises a high level of persistence in many communities.

Although over three quarters of the earth's deserts, grasslands, forests and tundra have changed because of human activity, the researchers say that even in this fragmented landscape species are surviving better than was previously predicted. The paper cites more recent studies and concludes that even in altered landscapes 'all is not lost for biodiversity'.

The researchers point to a study into 785 animal species across six continents, which suggests the most important factor for occupancy is the quality of the animals' immediate environment rather than whether their habitat is shrinking. Their paper also highlights a study of forest [butterflies](#) in West Africa, which found that despite an 87 per cent reduction in forest cover, 97 per cent of species are still present.

Professor Kathy Willis, from the School for Geography and the Environment, expresses some caution about the apparent ability of species to survive in a more fragmented habitat. She said: ‘Presence or absence does not take into account lag effects of declining populations. Therefore, a more worrying interpretation is that the full effects of fragmentation will only be seen in future years.’

The paper also highlights a serious issue for future conservationists, arguing that the definition of ‘natural’ is changing fast.

Dr Shonil Bhagwat, from the School of Geography and the Environment, said: ‘Although every measure should be put in place to reduce the further fragmentation of reserves, we cannot turn back the clock. We need to determine what represents a “good” intervention to preserve animal habitats in the countryside and in towns and cities. Furthermore, we will increasingly see new ecosystems emerging as a result of climate changes and so what is “natural” is going to require a whole new definition.’

Provided by Oxford University ([news](#) : [web](#))

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