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Studies 'overstate species risks'

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Different models predicted differing outlooks for Alpine species

Some large-scale computer simulations may be overestimating the impact of climate change on biodiversity in some regions, researchers have suggested.

They said models that analyse vast areas often failed to take into account local variations, such as topography and microclimates.

Local-scale simulations, which did include these factors, often delivered a more optimistic outlook, they added.

The findings have been published in the journal, *Science*.

One of the studies cited in the paper looked at the fate of plant species in the Swiss Alps.

"A coarse European-scale model (with 16km by 16km grid cells) predicted a loss of all suitable habitats during the 21st Century," the researchers wrote.

"Whereas a model run using local-scale data (25m by 25m grid cells) predicted (the) persistence of suitable habitats for up to 100% of plant species."

Micro v macro

Co-author Shonil Bhagwat, a senior research fellow at the University of Oxford, UK, said when vegetation was looked at on a smaller scale, scientists saw a different picture.

"For example, smaller plots give data on microclimatic variations, whereas large-scale models predict (uniform) changes throughout the landscape."

Advances in computing power meant that more large-scale datasets were being made available to scientists, Dr Bhagwat explained.

"There is more interest in predicting widespread, large-scale effects," she told BBC News, "that is why coarser-scale models are normally used."

"However, the changes in communities of vegetation occur at a much smaller scale."

In the paper, Dr Bhagwat and co-author Professor Kathy Willis, wrote: "These studies highlight the complexities that we are faced with trying to model and predict the possible consequences of future climate change on biodiversity."

The researchers called for more micro-scale studies to be carried out that complement the overall picture presented by larger models.

However, they added that the overall picture for biodiversity loss was still bleak, especially once the rate of habitat loss and fragmentation was taken into account.

"Predicting the fate of biodiversity in response to climate change combined with habitat fragmentation is a serious undertaking fraught with caveats and complexities," they observed.

For example, Dr Bhagwat explained, the current system of having fixed nature reserves may need to be reconsidered.

"We have 12% of the Earth's land surface covered in protected areas, but climate change is likely to push species out of their home ranges and out of reserves," she added.

"So we need to look beyond reserves and create the conditions that allow the migration of species."