

Biodiversity falls below 'safe levels' globally

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Levels of global biodiversity loss may negatively impact on ecosystem function and the sustainability of human societies, according to UCL-led research.

"This is the first time we've quantified the effect of habitat loss on biodiversity globally in such detail and we've found that across most of the world [biodiversity loss](#) is no longer within the safe limit suggested by ecologists" explained lead researcher, Dr Tim Newbold from UCL and previously at UNEP-WCMC.

"We know biodiversity loss affects ecosystem function but how it does this is not entirely clear. What we do know is that in many parts of the world, we are approaching a situation where [human intervention](#) might be needed to sustain ecosystem function."

The team found that grasslands, savannas and shrublands were most affected by biodiversity loss, followed closely by many of the world's forests and woodlands. They say the ability of biodiversity in these areas to support key ecosystem functions such as growth of living organisms and [nutrient cycling](#) has become increasingly uncertain.

The study, published today in *Science*, led by researchers from UCL, the Natural History Museum and UNEP-WCMC, found that levels of biodiversity loss are so high that if left unchecked, they could undermine efforts towards long-term sustainable development.

For 58.1% of the world's land surface, which is home to 71.4% of the

global population, the level of biodiversity loss is substantial enough to question the ability of ecosystems to support [human societies](#). The loss is due to changes in land use and puts levels of biodiversity beyond the 'safe limit' recently proposed by the planetary boundaries - an international framework that defines a safe operating space for humanity.

"It's worrying that land use has already pushed biodiversity below the level proposed as a safe limit," said Professor Andy Purvis of the Natural History Museum, London, who also worked on the study.

"Decision-makers worry a lot about economic recessions, but an ecological recession could have even worse consequences - and the biodiversity damage we've had means we're at risk of that happening. Until and unless we can bring biodiversity back up, we're playing ecological roulette."

The team used data from hundreds of scientists across the globe to analyse 2.38 million records for 39,123 species at 18,659 sites where are captured in the database of the PREDICTS project. The analyses were then applied to estimate how biodiversity in every square kilometre land has changed since before humans modified the habitat.

They found that biodiversity hotspots - those that have seen [habitat loss](#) in the past but have a lot of species only found in that area - are threatened, showing high levels of biodiversity decline. Other high biodiversity areas, such as Amazonia, which have seen no land use change have higher levels of biodiversity and more scope for proactive conservation.

"The greatest changes have happened in those places where most people live, which might affect physical and psychological wellbeing. To address this, we would have to preserve the remaining areas of natural

vegetation and restore human-used lands," added Dr Newbold.

The team hope the results will be used to inform conservation policy, nationally and internationally, and to facilitate this, have made the maps from this paper and all of the underlying data publicly available.

More information: "Has land use pushed terrestrial biodiversity beyond the planetary boundary? A global assessment," *Science*, [science.sciencemag.org/cgi/doi ... 1126/science.aaf2201](https://science.sciencemag.org/cgi/doi/10.1126/science.aaf2201)

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