

Biodiversity: Why foods grown in warm climates could be doing the most damage to wildlife

January 26 2021, by Tim Newbold, Adrienne Etard, Gonzalo Albaladejo Robles and Jessica J Williams



Credit: AI-generated image ([disclaimer](#))

[Nearly half of the food](#) eaten in the UK is grown abroad. Take your morning tea or coffee. These are just two of the many crops grown in tropical and sub-tropical climates that depend on animal pollination and

countless other services provided by wildlife before they can reach our kitchen tables. But how often do we consider biodiversity when enjoying them?

You'll probably be used to hearing that animal populations have declined by more than [two-thirds since 1970](#) worldwide, and that around one million species are at [risk of extinction](#). Many of these species are threatened by farmland expanding into their habitats, and while there's a [growing appetite](#) to reform our broken relationship with nature, it's important to recognize that threats to biodiversity are not equally distributed.

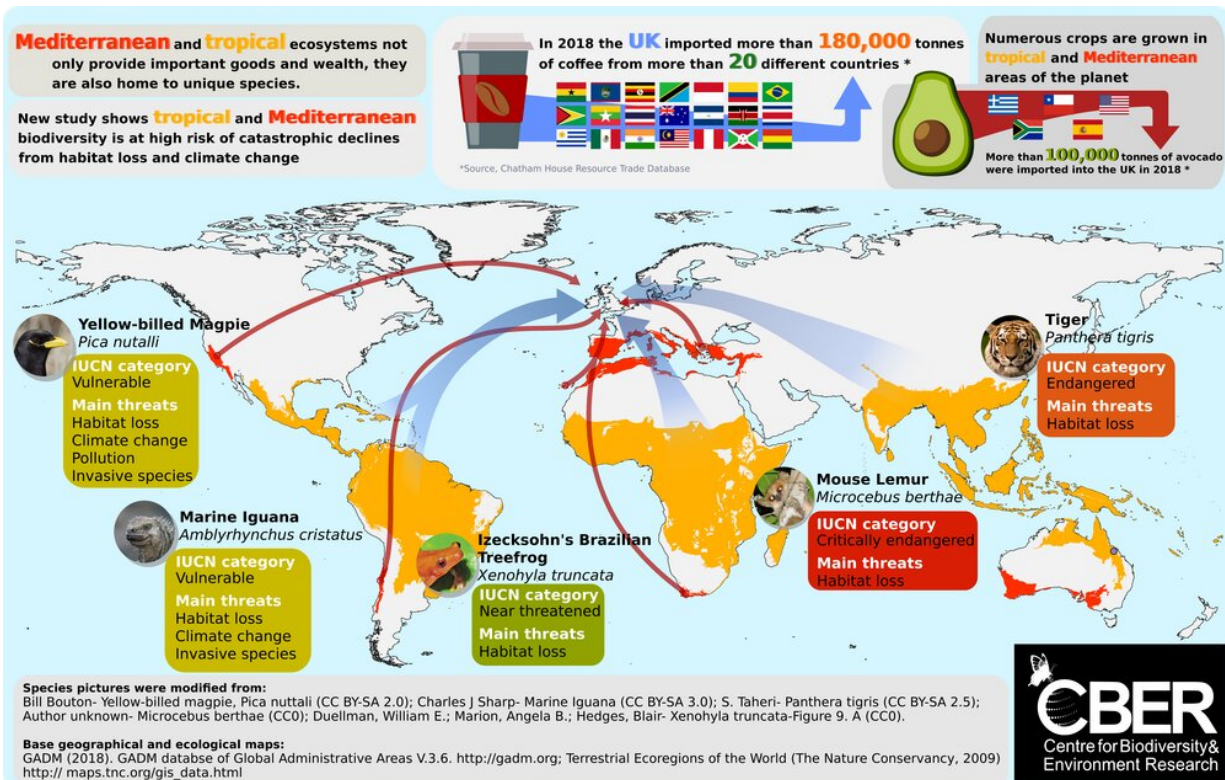
In [a recent study](#), we compared data for more than [40,000 species across 91 countries](#) to understand how they're likely to be affected by [habitat loss](#). We also investigated how more than 20,000 species are [likely to cope with rising temperatures](#). We found that plants and animals in [tropical and Mediterranean environments](#) are at the greatest risk of suffering catastrophic declines from losing their habitats and from climate change.

Our research shows that around a third of all species may be lost when tropical or Mediterranean habitats are converted to farmland. These habitats include the tropical forests of Madagascar—where the critically endangered [mouse lemur](#) lives—and woodlands in the Mediterranean climate of California—where vulnerable [yellow-billed magpies](#) can be found. In comparison, converting [natural habitats](#) to farmland in northern Europe or North America may lead to the loss of less than one quarter of species on average.

Worryingly, tropical habitats are already [shrinking rapidly](#), losing an area the size of a football pitch [every six seconds](#). These habitats are also likely to face [extreme temperatures sooner](#) than those at higher latitudes. By the end of the century, it's expected that [tropical areas](#) will face

climate conditions not seen on Earth for [millions of years](#).

We found that, for every additional degree of warming in a tropical or Mediterranean region's climate, 10% of its species are likely to disappear. Elsewhere, such as in temperate and sub-Arctic forests, less than 6% of species are thought to go extinct for each additional degree.



Global consumption drives biodiversity losses in tropical and Mediterranean areas. Credit: Gonzalo Albaladejo Robles, Author provided

Tropical and Mediterranean species

If you grew up in a temperate country like the UK and then spent a year

in a tropical country like Brazil, you'd notice how much less the tropical climate changes from season to season. Tropical species have evolved to cope with a more stable environment, making them less capable of coping with abrupt climatic changes. Tropical species tend to have a slower pace of life too, with fewer offspring and longer generations than species from other parts of the world. This makes them more vulnerable to habitat loss, because they can't replenish their populations as quickly.

Tropical species also inhabit some of the hottest places on Earth, and many populations are already at the limit of temperatures they can cope with. Further warming is likely to push them beyond these limits. Farmlands and cities tend to be warmer and drier than natural habitats too, so as these habitats are lost, the species that remain are made more vulnerable to the effects of climate change.

Compared to Europe or North America, the tropics lack a long history of humans disturbing natural habitats at large scales. In places like the UK, where forests were felled and wetlands drained to create farmland over hundreds and even thousands of years, the most sensitive species have already been wiped out. Further changes fall on a hardy set of species. But in tropical regions, large-scale agriculture began much more recently, and many species here aren't ready to face the combined onslaught of habitat loss and climate change.

The situation is similar in Mediterranean climates, where species are very specialized and already experience temperatures near the upper limits that they can tolerate. Though many of these species will have lived alongside farming for thousands of years, this doesn't seem to offer much protection against ongoing habitat loss.



Wildlife in the Cameron Highlands of Malaysia is particularly vulnerable to expanding farms. Credit: Tim Newbold, Author provided

Biodiversity loss matters

While [healthy environments](#) depend on a diverse range of species, so does much [of the food we eat](#). Most crops that need animals to pollinate them—including nuts, avocados, coffee and cocoa—can only grow in warm climates, where biodiversity is at such high risk from expanding farmland. Coffee alone [supports 210,000 jobs](#) in the UK, where we drink 95 million cups a day.

Our study showed that food produced in tropical and Mediterranean

regions comes at a higher cost to biodiversity than that grown elsewhere. Nevertheless, it is not necessarily desirable to avoid these products because having a varied diet is important for maintaining a healthy lifestyle. So when buying exotic produce, try to choose [certified products](#) that originate from farms making efforts to protect local biodiversity.

It also helps to remember that some goods cause more [habitat](#) loss than others, such as [meat and dairy](#). Eat and drink less of these land-hungry products if you can, especially if they came from a tropical or Mediterranean [climate](#). Above all, we must reduce greenhouse gas emissions. Every degree of warming avoided prevents the loss of one in ten [species](#) from the world's tropical and Mediterranean climates.

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