

# European grasslands challenge rainforests as the most species-rich spaces on Earth

March 15 2012

---

The city of Manila holds the human world record for the most densely populated space and now an international team of ecologists are seeking the natural equivalent, the most species rich area on earth. The team's findings, published in the *Journal of Vegetation Science*, reveal the record is contested between South America's tropical rainforests and Central European meadows.

"The coexistence of large numbers of [species](#) in one space and the questions it raises have long fascinated ecologists," said Professor Bastow Wilson, from the University of Otago, New Zealand. "For example it's a core ecological principle that two species occupying the same niche cannot co-exist long-term, so how can 942 plant species co-exist in one hectare of tropical rainforest?"

While [tropical rainforests](#) of South America and [Central Africa](#) are often believed to be the most species rich areas on Earth, Professor Wilson's team sought to establish if this is true, especially if smaller spatial scales are analysed.

"We surveyed the global literature to find records of plant [species richness](#) at scales from 1 mm<sup>2</sup> up to 1 hectare. Above 50 m<sup>2</sup>, all the maximum values were from tropical rainforests in Costa Rica, Columbia or Ecuador," said Wilson. "However, looking at smaller scales we have found that long-grazed or mown grasslands are the most species rich places on Earth."

These very rich grasslands were found in the eastern half of Europe, from the German border through to Romania, although two examples were also found in Argentina. Most were over limestone, and two were from wooded meadow, a landscape once common over northern Europe but now very rare.

Using these data the team asked if there is a theoretical maximum for the number of species which can co-exist in one area. They extrapolated the relationship up to 1 hectare, predicting the number of [plant species](#) over the whole earth.

"Any scientific hypothesis should be tested in a new situation, and the strongest test is extrapolation, even if school teachers warn their pupils not to do it," concluded Wilson. "This left us with a predicted number of 219,204 species, remarkably close to the latest estimate of the world's vascular flora at 275,000 species."

**More information:** Wilson. J,B. Peet. R, Dengler. J, Pärtel. M, Plant species richness: the world records, *Journal of Vegetation Science*, Wiley-Blackwell, [DOI: 10.1111/j.1654-1103.2012.01400.x](https://doi.org/10.1111/j.1654-1103.2012.01400.x)

Provided by Wiley

Citation: European grasslands challenge rainforests as the most species-rich spaces on Earth (2012, March 15) retrieved 26 April 2024 from <https://phys.org/news/2012-03-european-grasslands-rainforests-species-rich-spaces.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.