

Tree species diversity enhances forest drought resistance

September 22 2022



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A research team led by Prof. Wang Tao and Dr. Liu Dan from the Institute of Tibetan Plateau Research of the Chinese Academy of Sciences has revealed that tree species diversity could enhance drought resistance in nearly half the world's forests.

Their findings were published in *Nature Geoscience* on Sept. 19.

Extreme [drought](#) can strongly reduce the growth of forests and even lead to their death. Tree species diversity can increase [forest](#) drought resistance. However, this effect has only been demonstrated for a small number of forest types; whether it applies to different types of forests around the world experiencing [extreme drought](#) has not been well understood.

In this study, using global satellite observations and species-richness data from more than 700,000 forest plots, the researchers estimated the effect of tree species diversity on the drought response of forests at a global scale. They found that species-rich forests such as moist tropical broadleaf forests, which have an average of 65 tree species, showed the highest drought resistance. In contrast, species-poor forests such as xeric woodlands, which have only two or three tree species, showed the lowest drought resistance.

Moreover, the researchers mapped the global species-diversity effect on forest drought resistance. Based on their results, they predicted that higher species richness had a positive effect on drought resistance in nearly half of all global forests, with the largest effect in dry and drought-prone forests such as xeric woodlands or subtropical dry forests.

"We estimate that converting current forest plantations from monocultures to a mixture of four species could increase [drought resistance](#) of global plantation forests by 3.2%, with the largest increment found in dry forests," said Prof. Wang, corresponding author of the study.

These findings emphasize the importance of restoring [tree species](#) diversity in helping forests resist frequent and intense droughts that may occur as a result of global warming. "Restoring [species diversity](#) and multispecies planting should be included in forest policy, especially for dry forests," said Dr. Liu Dan, first author of the study.

More information: Dan Liu et al, Drought resistance enhanced by tree species diversity in global forests, *Nature Geoscience* (2022). [DOI: 10.1038/s41561-022-01026-w](https://doi.org/10.1038/s41561-022-01026-w)

Provided by Chinese Academy of Sciences

Citation: Tree species diversity enhances forest drought resistance (2022, September 22) retrieved 23 June 2024 from <https://phys.org/news/2022-09-tree-species-diversity-forest-drought.html>

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