

Old-growth trees more drought tolerant than younger ones, providing a buffer against climate change

December 1 2022



The stump of a 500-year-old juniper on the Tibetan Plateau, China. Deforestation has made forests younger and has also negatively impacted associated ecosystem functions and biodiversity. Credit: Tsun Fung Au.

A new analysis of more than 20,000 trees on five continents shows that old-growth trees are more drought tolerant than younger trees in the forest canopy and may be better able to withstand future climate extremes.

The findings highlight the importance of preserving the world's remaining old-growth forests, which are biodiversity strongholds that store vast amounts of planet-warming carbon, according to University of Michigan forest ecologist Tsun Fung (Tom) Au, a postdoctoral fellow at the Institute for Global Change Biology.

"The number of old-growth forests on the planet is declining, while drought is predicted to be more frequent and more intense in the future," said Au, lead author of the study published online Dec. 1 in the journal *Nature Climate Change*.

"Given their [high resistance](#) to drought and their exceptional carbon storage capacity, conservation of older [trees](#) in the upper [canopy](#) should be the top priority from a [climate](#) mitigation perspective."

The researchers also found that younger trees in the upper canopy—if they manage to survive drought—showed greater resilience, defined as the ability to return to pre-drought growth rates.

While deforestation, selective logging and other threats have led to the global decline of [old-growth forests](#), subsequent reforestation—either through natural succession or through [tree planting](#)—has led to forests dominated by increasingly younger trees.

For example, the area covered by younger trees (

Citation: Old-growth trees more drought tolerant than younger ones, providing a buffer against

climate change (2022, December 1) retrieved 20 April 2024 from
<https://phys.org/news/2022-12-old-growth-trees-drought-tolerant-younger.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.