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Old trees work faster at storing carbon

Old trees contribute more to carbon storage than previously thought in a new international study that included Australian researchers.

Credit: scienceimage/CSIRO

The study – just published in the journal *Nature* – demonstrated that tree growth rates increased continuously with size, and in some cases, large trees appeared to be adding the carbon mass equivalent of an entire smaller tree each year.

The significance of this study is that big old trees are better at absorbing carbon from the atmosphere than previously thought.

‘Our research shatters the long-standing assumption that tree growth declines as individuals get older and larger,’ said contributing author, Associate Professor Patrick Baker from the Melbourne School of Land and Environment, University of Melbourne.

‘However, the rapid carbon absorption rate of individual large trees does not necessarily translate into a net increase in carbon storage for an entire forest.’

Coauthor, Dr Adrian Das, an ecologist at the US Geological Survey said, ‘Old trees, after all, can die and lose carbon back into the atmosphere as they decompose.

‘But our findings suggest that while they are alive, large old trees play a disproportionately important role in a forest’s carbon dynamics. It is as if the star players on your favourite sports team were a bunch of 90-year-olds.’

Researchers compiled growth measurements of 673,046 trees belonging to 403 species from tropical, subtropical and temperate regions across six continents, calculating the mass growth rates for each species and analysing the trends.

The study was a collaboration of 38 researchers from research universities, government agencies and non-governmental organisations from Argentina, Australia, Cameroon, China, Colombia, Democratic Republic of Congo, France, Germany, Malaysia, New Zealand, Panama, Spain, Taiwan, Thailand, the United Kingdom and the United States.

'What makes these results so compelling is the sheer scale of the datasets that we had available to work with,' said Associate Professor Baker.

Associate Professor Baker and Will Morris, a PhD student in the School of Botany, involved in providing and analysing data from the thousands of trees from Thailand.

Source: University of Melbourne