

MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

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Unexpected results of ice ages predict effects of future climate change

Research from the Universities of Tasmania and Melbourne has turned theories of why some places have a richer diversity of plants on their head by showing there was a previously unknown mass extinction of shrubs and trees in southern Australia.

Led by Dr Greg Jordan from UTAS and Dr Kale Sniderman from Melbourne, the team's work is published in the prestigious *US Proceedings of the National Academy of Sciences*.

The researchers have shown plant diversity in SE Australia was as rich as some of the most diverse places in the world, and that most of these species went extinct during the ice ages, probably about one million years ago.

Dr Sniderman said this means that extinctions drive the diversity of organisms around the world as much as evolution.

"This is important for understanding how our plant diversity will deal with current and future climate change," he said.

"The species that went extinct in SE Australia during the ice ages were likely to be the ones most sensitive to rapid climate change, meaning that the species that now grow in eastern Australia may be more capable of tolerating rapid changes than predicted by current science.

"However, the species in hotspots of diversity like Western Australia may be much more sensitive to climate change."

Traditionally scientists believed some places have more species than others because species evolved more rapidly in these places.

"South-western Australia has a huge diversity of tough-leaved shrubs and trees such as eucalypts, banksia, grevilleas and acacias, making it one of the most biodiverse places on earth," Dr Jordan said.

“The southern tip of South Africa is even richer, with astonishing numbers of similar kinds of plants like proteas and ericas. Scientists have long held that this is somehow related to the poor soils and dry summers of these places.

“We used plant fossils from near Daylesford in Central Victoria to show that eastern Australia had at least as many tough-leaved plants 1.5 million years ago as Western Australia and South Africa do today.”

This was entirely unexpected.

“Rainforest plants disappeared from most of Australia as the continent dried out over the past several million years.

“It has been thought that this drying trend allowed Australia’s characteristic tough-leaved plants to expand and became more diverse. We have shown that the climate variability of the ice ages not only drove rainforest plants to extinction but also a remarkable number of tough-leaved, shrubby plants”, Dr Jordan said.

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