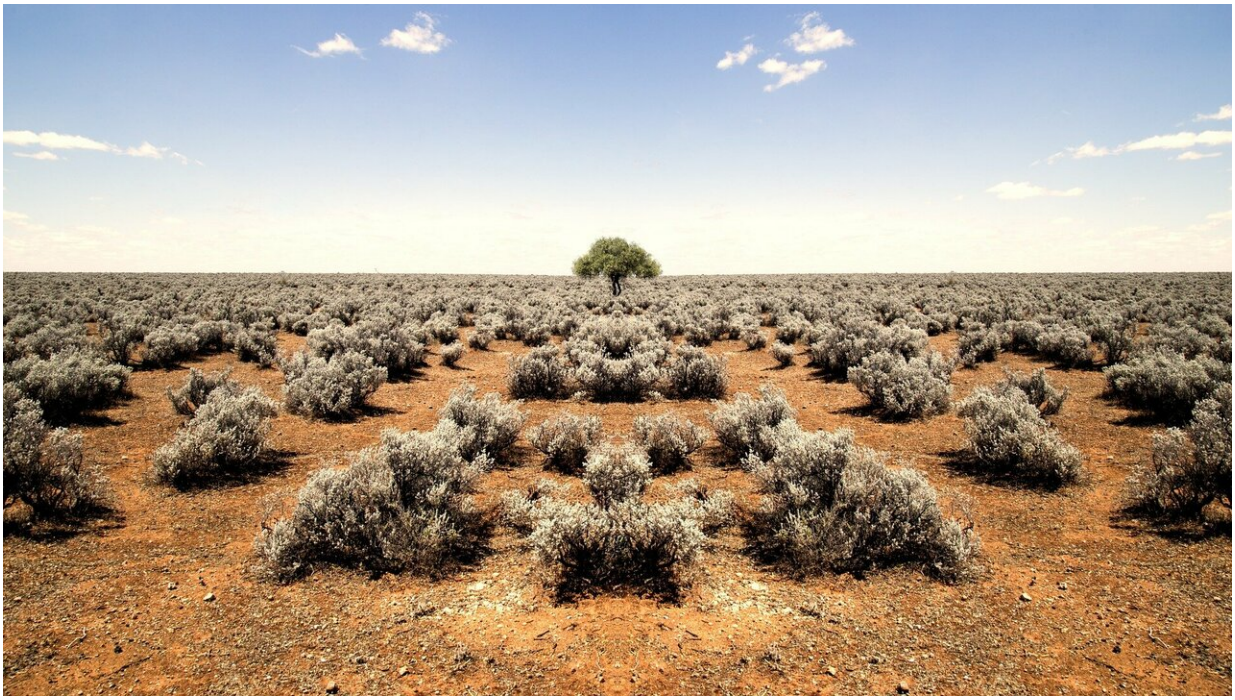
Catastrophic outlook for African savannahs due to rise in CO2 levels

March 1 2019



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A ground-breaking research study looking at modern and ancient landscapes has discovered African plants could be facing mass extinction faster than once thought.

Scientists from the Lyell Centre, Heriot-Watt University, looked at chemical fossils, with special emphasis on plant vegetable oils preserved

in ancient sediments.

The fossils revealed almost 8,000 sub-tropical African plant species from an estimated total of about 23,000 species could become extinct within the next few decades.

The worrying figure amounts to 33 per cent of Africa's contemporary plant diversity, affecting basic ecosystems worldwide.

Academics also claim, the magnitude of biodiversity loss projected for southeast Africa over the next 100 years will be more significant than anything seen in the last 15,000 years or more.

The trend was discovered after researchers looked into the widespread rapid decrease of (sub) tropical biodiversity, including plants during the most recent large-scale global warming event (deglaciation amid 10,000 to 18,000 years ago) that followed the Last Glacial Maximum.

They discovered the decline was due to rapidly rising atmospheric CO2 levels which affected the ability of plants with specialised traits, to complete with more cosmopolitan and faster growing plants like weedy grasses.

This is due to the rate at which carbon dioxide increases and the fact that the specialised plants can't find habitats suitable for reproduction.

Dr. Clayton Magill explains: "We used chemical fossils derived from vegetable oils to track the source and movement of plant taxa across modern and ancient landscapes.

"These chemical fossils carry important environmental information within themselves as reflected through differences in their carbon composition at the atomic level. We found carbon compositional

differences, in turn reflect the diversity of differing plant-type contributions into sediments.

"To break it down, this situation is much like sharing a kitchen with many roommates. With few exceptions, roommates all have unique dietary preferences and the diversity of these preferences correlates with the diversity of roommates.

"If we assume that different dietary preferences lead to carbon compositional differences in roommates' oils, then we can see that a larger range of compositional differences is indicative of increased diversity.

"Our study informs us of a possible catastrophic outlook for plants and diversity in this African region and the fact the magnitude of biodiversity loss will be especially pronounced for sub-tropical regions, such as savannahs."

Dr. Magill goes on to explain that this discovery may be a cause for concern, for future generations, adding: "Plant diversity is important to human welfare worldwide and the next generation should be careful to look after eco-systems so there is no further decline.

"Our study is alarming due to the differentiation of key resources such as water, carbon and light among plants in hot, dry and heterogeneous environments.

"However, it's important to note that the imminent extinctions suggested through this work are independent of the sources of CO2."

This study was published via *PLOS ONE*.

More information: Clayton R. Magill et al. Isotopic variance among

plant lipid homologues correlates with biodiversity patterns of their source communities, *PLOS ONE* (2019). DOI: 10.1371/journal.pone.0212211