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Landscape-scale declines in forest health across southwest Western Australia

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The southwest Australia Ecoregion located in the southwest of Western Australia (SWWA) is Australia's only globally recognised 'biodiversity hotspot'. Changes in landscape scale processes have increasingly affected this region, influencing and changing its unique and diverse flora and fauna. Specifically, SWWA has experienced a declining trend in rainfall since the early 1960's. The future projections are unanimous in that this trend will continue at a rate of 1-5 mm per year. This change in water availability is thought to have an increasing negative impact on the health of the endemic tree species and related ecosystems in this region. In SWWA, only very few large-scale surveys have been conducted measuring canopy health across the geographical range of *Eucalyptus* species. One key forest ecosystem in SWWA is dominated by the canopy tree species *Eucalyptus wandoo* (wandoo). This species has shown various phases of decline and recovery over the last 50 years; however, the trend in overall health over time across its range was never assessed. The aim of this research was to identify the main drivers of wandoo ecosystem health at the landscape scale (i.e. covering its entire geographical range). Wandoo crown health was assessed in 2002 and 2008, and a suite of environmental and climate factors were collected to investigate the relationships between wandoo crown health, climate and the landscape. The results of this investigation indicated a declining trend in health at the extremities of the climatic range of wandoo. This correlated with the lower rainfall areas where wandoo occurs in SWWA, indicating that the declining trend in rainfall is likely to decrease the range of wandoo dominated ecosystems. This result is one of the few clear examples of the impacts of climate change on forest health at the landscape scale in southwest Western Australia.