Managing South-Western Australia's threatened species in an era of global change

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Threatened plant species in SWWA are subject to multiple threatening processes which operate across ecological scales. Research investigating the effects of threatening processes on population viability provides guidance for determining priority actions for recovery, translocation and ongoing conservation management of threatened plants. The following provides a summary of key findings relevant to management. Contrary to expectations, many threatened SWWA plant species investigated to date have pollination and mating systems that allow them to produce fit offspring in small isolated population fragments. Despite this, populations remain at risk of extinction from demographic and environmental stochasticity. In such cases managing persistence (hydrology, fire) and regeneration (fire, weeds), and undertaking translocations will be more important than increasing connectivity among landscape fragments.

Investigations of threatened plants endemic to granite outcrops show that populations are stable provided adult plants are protected from factors which increase the risk of mortality, in this case livestock grazing and fire. Remarkably, extant populations have persisted on the same outcrops since the early Pleistocene (1 to1.5 Mya), a period of extraordinary climate dynamism, giving some hope that the climate tolerances of species may be broader than their present geographic distributions indicate.

The co-incidence of multiple threatening processes and limited management options may make *in situ* conservation intractable for some species. In the Stirling Range National Park, 12 threatened plant taxa are restricted to the mountain peaks. The pathogen *Phytophthora cinnamomi* has become prevalent in the montane environment causing widespread mortality among endemic species such as *Banksia montana*. Two wildfires killing many plants and low rates of seedling replacement have further reduced the viability of the population. Projected climate change may place further stress on montane species. Ecological monitoring precipitated *ex situ* conservation measures for *B. montana* that at least provide some insurance in the near term, but options for conservation in the wild remain limited.

Management of threatened species must recognize that threatening processes are often interactive and multi-scalar. Rapid climate change is a new stressor on biodiversity and conserving threatened species will become an even greater challenge.

Threatened Species Research Forum

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A Review of WA Government Research into Threatened Species