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# Botanic gardens and scientific research: collaborations for conservation

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Botanic Gardens are well-suited as unique conservation hubs through collaborative partnerships with government agencies, tertiary institutions, not-for-profit organisations, private landholders and citizen scientists. The Royal Botanic Gardens Victoria (RBGV) is an example of the evolving role botanic gardens can play in biodiversity conservation. In 2018, the world's first Climate Change Alliance of Botanic Gardens was launched at RBGV in Melbourne. RBGV has documented Australian and non-native flora through plant collections and taxonomic research since establishment in 1846 with over 1.5 million plant specimens held at The National Herbarium of Victoria, located at RBGV. The scientific and horticultural expertise of staff enables research designed to both maintain the historic and contemporary horticultural landscapes of the gardens, and to improve the conservation of rare and threatened plants under Australia's changing climate which is a factor in the greater frequency and severity of fires in southeastern Australia. Advances in DNA sequencing technology have had a huge impact on the availability of data for non-model species. RBGV now plays a significant role in generating population genetic data for applied use in managing rare and threatened species prioritising those vulnerable to fire, and also in a national project, the Genomes of Australian Plants, producing reference genomes and conservation genomics data. While systematics is still core research, increasingly, conservation botany and genomics data have become integral to the design of scientifically-based conservation guidelines and species recovery plans by distinguishing genetic lineages, species boundaries and population gene flow. RBGV's collaborative approach provides capacity to undertake multifaceted research and to target the biological factors vital for continued species viability *in situ* and in horticultural settings. With the Victorian Conservation Seedbank and facilities such as x-ray and SEM equipment, tissue culture and growing facilities, RBGV is well-placed to tackle the emerging climate-driven biodiversity challenges.