

COUNCIL OF HEADS OF AUSTRALIAN BOTANIC GARDENS INC.

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Committee Secretary
Senate Standing Committees on Environment and Communications
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SUBMISSION: AUSTRALIA'S EXTINCTION CRISIS – PLANT CONSERVATION

Dear Committee Secretary,

On behalf of the Council of Heads of Australian Botanic Gardens Inc. (CHABG) and the Australian Seed Bank Partnership (the Partnership), we write to provide a submission to the 'Australia's Extinction Crisis' inquiry.

CHABG is a not-for-profit organisation comprised of Australia's capital city botanic gardens who work together to protect, conserve and enhance the Australian flora and their ecosystems. CHABG's member gardens provide national coordination and collaboration that deliver effective and efficient ex situ (off site) conservation of Australia's plant diversity. In 2010, CHABG established the Australian Seed Bank Partnership, in recognition of the importance of seed conservation to the future security of Australia's plants. The Partnership is an alliance of 15 organisations including conservation seed banks at Australia's leading botanic gardens and state environment agencies, and restoration and plant conservation NGO's and the Millennium Seed Bank of the Royal Botanic Gardens, Kew in the UK. The Partnership operates strategically to conserve Australia's native plant diversity through collaborative and sustainable seed collecting, banking, research and knowledge sharing.

This submission provides the perspective and recommendations of CHABG and the Partnership on Australia's extinction crisis. In particular, we focus on the role of botanic gardens and seed banks in mitigating plant decline through ex situ collections and associated research; our collective contribution to Australia's international obligations under the UN Convention on Biological Diversity, specifically related to the Global Strategy for Plant Conservation; and the challenges limiting further progress in the long-term conservation of Australia's threatened flora.

The role of botanic gardens and seed banks in plant conservation

As outlined in Australia's *State of the Environment 2021* reportⁱ, Australia's environment is poor and deteriorating because of increasing pressures from climate change, habitat loss, invasive species, pollution and resource extraction. With 1,402 plant species currently listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the need for a coordinated approach to halting species decline is crucial.

Australian botanic gardens and seed banks deliver substantial conservation opportunities for native plants by housing more than 13,000 native taxa in living collections outside of their natural habitat. These collections are an essential insurance policy against future threats and include reference and display collections, seed and nursery collections, and tissue culture and cryostorage collections. Botanic gardens and seed banks also provide opportunities to understand our native flora through biological and ecological science and research, including the discovery and identification of species by taxonomists, a central element that underpins legislative implementation of conservation and investment for threatened species, as well as the development of national and international plant conservation guidelines and standards. Fostering an understanding of how to store, germinate and grow threatened plants is a critical piece of the restoration puzzle, and is a strength of botanic gardens and seed banks across Australia.

CHABG and the Partnership contribute to national threatened species targets including three action areas in the Australian Government's *Threatened Species Strategy Action Plan 2021–2026*ⁱⁱ. These include efforts to



secure nationally listed plant species in insurance populations; as well as work to develop inventories of ex situ living collections for both threatened species and Myrtaceae species at risk of extinction due to the impacts of Myrtle Rust (*Austropuccinia psidii*).

Additionally, both organisations contribute significantly to sharing knowledge to facilitate plant conservation. For example:

- CHABG is coordinating a project to finalise IUCN Red List assessments for over 1,500 Australian endemic tree species under the [Global Tree Assessment \(GTA\)](#) initiative. The GTA aims to make conservation assessments for all the world's tree species available on the IUCN Red List to support more informed management decisions in relation to trees.
- The Partnership continues to deliver substantial and coordinated seed collecting and banking across every state and territory, including Australia's external territories. More than 13,000 taxa have been secured in seed banks due to funding from governments, philanthropic organisations, grants and public donations both during the life of the Partnership and in the years preceding its existence.
- In 2021 the Partnership collaborated with the Australian Network for Plant Conservation to develop and publish the 3rd edition of the *Plant Germplasm Conservation in Australia* guidelinesⁱⁱⁱ. The guidelines are a key resource that consolidates the latest techniques, literature and procedures for optimising germplasm storage and use.
- The Partnership works closely with the Atlas of Living Australia (CSIRO) to deliver the [Australian Seed Bank Online](#), a portal that provides open access to seed bank and germination data across the country. This online resource is used by researchers, seed collectors and environmental managers, including governments, to examine the status of various ex situ collections in Australia and to inform national collecting priorities. The portal is currently being upgraded to incorporate seed germination data.
- The Partnership is currently reviewing seed collections secured across the Partnership between 2000 and 2020 to identify the environmental representativeness, functionality and value of the Partnership's native seed meta-collection. This review will identify gaps in the Partnership's collections, with further analysis providing options for data-driven prioritisation and targeted investment in ex situ conservation and research across Australia.

The Global Strategy for Plant Conservation

The [Global Strategy for Plant Conservation](#) (GSPC) under the UN Convention on Biological Diversity (CBD) is an important vehicle for driving plant conservation at local, national and international levels. Australia has been a critical global partner in helping to achieve the targets of the GSPC over the past two decades, with botanic gardens and seed banks playing a key role in Australia's delivery against several targets for their ability to:

- advise governments on efficient allocation of plant conservation resources,
- undertake research and collate information to inform environmental management, and
- utilise conservation collections for research, restoration, translocation and education.

For example, GSPC Target 8 provided a shared purpose for the Partnership to secure threatened flora in ex situ collections across the country. As reported in *Australia's Sixth National Report to the Convention on Biological Diversity 2014–2018*^{iv}, over 67 per cent of the 1,355 threatened flora species listed nationally at the time were represented in the Partnership's conservation seed banks.

Australia has already shown its support for the continuation of the GSPC within the proposed [Post-2020 Global Biodiversity Framework](#) (GBF), set to be agreed at the Conference of the Parties in Montreal in December 2022. The next iteration of the GSPC will be designed to nest within the negotiated goals and targets for the GBF, providing seamless opportunities for the alignment of plant conservation actions to inform Australia's contribution and reporting to the CBD.



Once agreed, Australia's international commitment to the GBF and GSPC will provide clear avenues through which to conserve our unique biodiversity and address the extinction crisis for both flora and fauna. By fully committing to the actions and supporting mechanisms within this critical multilateral environmental agreement, Australia will be well placed to drive plant conservation action across the botanical community for a third decade.

Integrating the updated GSPC within any future updates to *Australia's National Biodiversity Strategy and Action Plan*^v (NBSAP – or equivalent under the GBF) will contribute substantially to tackling the extinction crisis for plants. The existing *South Africa's Strategy for Plant Conservation*^{vi} is an example of how an individual CBD Party successfully integrated the GSPC into their national NBSAP suite of policies. This action has created a strong connection between national and global plant conservation targets, and supports targeted investment in agriculture, environment, education, First Nations land management and new technologies. If Australia were to adopt this approach, it would provide similar opportunities while also streamlining our international progress reporting on the implementation of the GBF at the national level.

Recommendation: That the Commonwealth Government note broad support across Australian Botanic Gardens for the proposed goals, actions and targets of the Post-2020 Global Biodiversity Framework, including the Global Strategy for Plant Conservation, to focus investments and efforts to understand, conserve and sustainably use native flora.

Challenges to achieving plant conservation goals

Appropriate support mechanisms are required to meet both the plant conservation goals of the GSPC, and of the conservation sector more broadly. The challenges our organisations face naturally align with the four 'implementation supporting mechanisms' outlined in the [Zero Draft of the Post 2020 Global Biodiversity Framework](#); illustrating the intrinsic commitment botanic gardens and seed banks have to supporting this fundamental international agreement.

1. Mobilizing sufficient resources:

The realisation of plant conservation goals across botanic gardens and seed banks at all levels depends heavily on external sources of funding. Outside of government appropriations, other external funding is generally small, short term, linked to discrete events, such as the 2019–20 Summer Bushfires, and highly competitive between similar environmental groups. This approach can lead to short term outcomes, duplication of effort, and prioritisation of projects with restricted geographical or temporal scope. With the increasing number and scale of threats to natural ecosystems (Murphy & van Leeuwen, 2021), the challenge will be in identifying suitable avenues for the implementation of targeted plant conservation efforts.

Continuing to commit to long-term, conservation programs across Australia's botanic gardens and seed banks will enable strategic implementation of conservation actions for native flora and avoid the loss of talented specialists seeking to secure ongoing employment elsewhere. Growing and securing a plant conservation workforce across botanic gardens, seed banks and plant conservation and restoration organisations would provide sufficient expertise to respond to business-as-usual threatened species conservation actions, while retaining the agility to respond to catastrophic events when they occur.

2. Capacity development:

Developing capacity within the plant conservation sector is critical to ensuring future challenges can be met with the skills and capabilities required to avoid known threats or ameliorate the impacts from those that cannot be avoided. As identified by Taxonomy Australia^{vii}, Australia's investment in botanical skills and training is modest by world standards. However, as one of the [world's identified megadiverse countries](#), a modest investment in botanical skills and expertise (plant science, taxonomy, horticulture etc) is insufficient to meet the practical long-term conservation of the continent's extensive endemic flora. Skills shortages can have significant impacts on the capacity and capability of Australia's workforce to deliver the products and services required by the Australian environment and the people who rely upon it for their food, fibre and wellbeing.



Identifying and growing existing investments to build the long-term expansion of plant conservation related disciplines and employment opportunities across Australia is central to avoiding plant extinctions. Such investments help to grow capacity across the botanical sciences (including botany, biology, ecology, taxonomy and horticultural programs etc) and support conservation actions that can effectively underpin a much-needed, larger ecological restoration sector in the future.

For centuries botanic gardens have provided opportunities for people to appreciate and learn about plants in a safe environment, however more recently the role of these institutions has evolved to incorporate targeted flora conservation both locally and across the globe. The historical perspective of botanic gardens as attractions rather than as agents for biodiversity protection can serve to limit conservation capacity, creating an expectation gap between the services they could offer, and the resourcing they receive to deliver their work. Improving the recognition, capacity and resourcing of established institutions like botanic gardens will support more efficient use of environmental funding, improve the development of conservation knowledge, and enhance botanic gardens' capabilities to support national ecological restoration actions for threatened species and other flora.

3. Knowledge generation, management and sharing:

The wealth of knowledge held by botanic gardens, seed banks, communities and organisations involved in plant conservation and habitat restoration is crucial to avoiding further plant extinctions. However, national coordination is needed to effectively link these experts and organisations with those who have the resources and capacity to restore environments on a broader scale. For example, the Partnership is a founding member of the [Restoration Decade Alliance](#), a network developed in response to the [UN Decade on Ecosystem Restoration 2020–30](#). Participation in this network is a necessary first step, but there is limited dedicated resourcing available for the implementation of the UN Decade at the scale required to avoid Australia's extinction crisis.

While botanic gardens have established networks and linkages with the restoration industry, Australia would benefit from enhanced national coordination across the native seed sector. Steps have been made through the publication of Greening Australia's *A strategy for the Australian Native Seed Sector*^{viii}, but further work is required to coordinate the sector and enable Australia to improve linkages between organisations that contribute to different stages of the plant conservation and ecological restoration process, and in turn, better utilise the diversity of flora held in ex situ facilities that can support seed science and ecosystem restoration at scale.

4. Technical and scientific cooperation, technology transfer and innovation:

Botanical science is crucial to effective conservation management. Investment in research, threatened species monitoring, and best-practice guidelines relies on the support of government agencies, botanic gardens, seed banks and conservation organisations, often including funding from philanthropic organisations. For example, the review and update of the *Plant Germplasm Conservation in Australia* guidelines (3rd edition) was funded by the Ian Potter Foundation and relied on in-kind support from the numerous experts across the Partnership including academics, seed banks, botanic gardens and environmental agencies. This 500-page document provides strategies and guidelines for developing, managing and utilising ex situ collections in Australia, and is a key resource for those working in seed science and conservation.

There is a need to support continued collaborations across the botanical science sector on a national and international level. Australia has a responsibility to continue fostering and growing its efforts to collaborate and share expertise and new technologies within the country but also with our Asia-Pacific neighbours who share similar floras and are tackling many of the same plant conservation challenges.

To ensure botanical science and conservation management are effectively connected, ongoing support for actions that improve our botanical and ecological knowledge, and its application will have the greatest influence on their success. This includes:

- botanical sciences at the tertiary level,



- research and long-term storage of plant germplasm in botanic gardens and seed bank facilities,
- the work of plant-conservation practitioners and seed scientists to use ex situ conservation collections in ecological restoration, and
- the collection of data on threatened plant species and ecological communities in situ to assist with management decisions.

We hope this submission proves useful in the Committee's inquiry. We are available to take questions if further information is required.

Kind regards,

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Council of Heads of Australian Botanic Gardens Inc.
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