AUSTRALIAN SEEDBANK PARTNERSHIP

Safeguarding Australia's Flora

through a national network of native plant seed banks

2020/21 ANNUAL REPORT

safeguarding Australia's flora

CONTENTS

Abbreviations

Alice Springs Desert Park (ASDP)
Australian Grains Genebank (AGG)
Australian National Botanic Gardens (ANBG)
Botanic Gardens and Parks Authority (BGPA)
Botanic Gardens and State Herbarium (BGSH)
Brisbane Botanic Gardens (BBG)
George Brown Darwin Botanic Gardens (GBDBG)
Royal Botanic Gardens and Domain Trust (RBGDT)
Royal Botanic Gardens, Kew (RBG Kew)
Royal Botanic Gardens Victoria (RBG Vic)
Royal Tasmanian Botanical Gardens (RTBG)
South Australian Seed Conservation Centre (SASCC)
The Council of Heads of Australian Botanic Gardens Incorporated (CHABG Inc.)
Western Australian Seed Centre (WASC), Department of Biodiversity Conservation and Attractions (DBCA)

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Cover: The pink flannel flower (*Actinotus forsythii*) flowering post-fire in the Narrowneck Plateau, Katoomba NSW. This bushfire-ephemeral flowers for only a few months before it disappears, waiting for the next bushfire to trigger its germination. It is important to bank such species in *ex situ* insurance collections, as they may be seen only a few times in a generation (Image: Peter Cuneo).

This page: The Western Australian Seed Centre collected seed from *Darwinia oxylepis*, commonly known as Gillham's bell. This species is found only in a few moist gullies near the lower slopes of the Stirling Range National Park and nearby Porongurup National Park.

LETTER FROM THE CHAIR

The work of the Council of Heads of Australian Botanic Gardens and the Australian Seed Bank Partnership has continued to focus on the impacts and recovery of native plants following the extensive 2019–2020 bushfires. We have also collectively adapted our approach to operations in botanic gardens, seed banks and in the field as COVID-19 further impacted our ability to undertake conservation projects and welcome visitors to our gardens around the country.

The devastating summer bushfires of 2019–2020 were followed by significant and sustained engagement across governments, business, philanthropy, and the *ex situ* conservation community. In concert, we have seen a substantial increase in funding to access and support botanical expertise across the country to contribute to the recovery effort. Furthermore, these opportunities are giving seed banks greater scope to target regional and national plant priorities and to improve our knowledge of how Australia's diverse native flora responds to large-scale and high-severity fires.

This year we welcomed Denise Ora – Chief Executive of the Royal Botanic Gardens and Domain Trust, Sydney to the CHABG Council. Denise has a proven track record in botanic gardens management, and replaces Brett Summerell as the Council Member for NSW. I want to thank Brett for his many years as a Council member and for continuing to support our work in his new role as CHABG Treasurer. Early in 2021 we farewelled Lucy Sutherland, who for more than 10 years contributed substantially to the work of the Australian Seed Bank Partnership and of CHABG. We wish Lucy well for her future endeavours. We also offer a warm welcome to Michael Harvey, who has joined us as the Council Member for SA, and who brings extensive experience curating collections.

As I formally step down from my position as Chair, I sincerely thank and acknowledge the CHABG Council and position holders for their dedication and commitment to ensuring the organisation fulfils its objectives and responsibilities as Australia's peak body for botanic gardens. I extend my very best wishes to Gary Davies from the Royal Tasmanian Botanical Gardens as he takes on the role of Chair from January 2022.

I look forward to the new chapter of CHABG with a refreshed and professional online presence, and new and continuing collaborations with government, business and the community – all supporting an enhanced, united effort towards achieving our shared conservation priorities for Australia's native flora.

Dale Arvidsson
Chair, Council of Heads of Australian Botanic Gardens Inc.

LETTER FROM THE NATIONAL COORDINATOR

Seed conservation in Australia has seen another incredible year. Across the country many dedicated seed collectors, scientists, students and volunteers have focussed their efforts on responding to bushfire impacts and the recovery of many threatened native species. These efforts have been nothing short of heroic, involving numerous field trips for collecting, multiple germination trials, and several translocations and seed orchards for the hundreds of species we're tackling across our various projects. Even more impressive to me is that the Partners have delivered this while battling rolling COVID-19-related lockdowns and wetter-than-average conditions brought on by La Niña.

At the same time, many of our Partners and Associates have been collaborating closely on the review of the 3rd edition of the *Plant Germplasm Conservation in Australia* guidelines (the Germplasm Guidelines), Australia's premier publication for anyone working in germplasm conservation. Led by the Australian Network for Plant Conservation (ANPC) in close collaboration with the Partnership, this project will culminate in the launch of this latest edition of the Germplasm Guidelines at the Australasian Seed Science Conference (ASSC 2021) in September 2021. Read more about this exciting project on page 22.

Many of the same experts that contributed to the guidelines have assisted in kickstarting preparations for the postponed ASSC 2021. This global virtual event will bring together scientists and seed practitioners from around the world to share their work, and I am looking forward to a week full of seed science. For more about the preparations for the conference see the article on page 29.

This year the Partnership participated in the national consultations for the Draft National Native Seed Strategy under Greening Australia's Project Phoenix, contributing time and expertise to the strategy's development. The Partnership also contributed the major on-ground component for the project. We delivered rapid flora assessments for 76 taxa, accessions for 108 taxa that are now stored in seed banks, and germination protocols for 58 new and existing collections of species threatened by the bushfires. I would like to congratulate Samantha Craigie and Greening Australia for their tremendous efforts in delivering this important project for the native seed sector. Read about Project Phoenix on page 23.

There are many great stories within this year's report highlighting the incredible achievements made in just 12 months. Our Goals and Achievements section (page 16) presents news from the Partners along with some of their individual contributions to Partnership projects. One of these was our 'Banking on Seeds for Bushfire Recovery' project, which delivered rapid flora surveys for 13 taxa, seed collections for 16 taxa, and germination trials for 13 taxa. Germinants were used to propagate almost 700 plants for use in reintroductions, seed orchards, and botanic gardens living collections to assist in educating visitors about the importance of conserving Australia's native plant species. If you turn to page 25 you will see the collection of informative fact sheets developed by the ANPC and Partners for some of these species.

I am again humbled by the work of the Partners in seed banks around Australia. It is a privilege to work with the incredible scientists, collectors, horticultural staff, experts and volunteers in our Partner and Associate institutions. This year we farewelled Luke Sweedman, who for many years led the seed collection program at Kings Park in Western Australia. Luke was the envy of many with his caravan and the open road. We wish Luke well and thank him for making such a significant contribution to the conservation of Australia's native flora. I am also pleased to welcome back Ben Wirf to the George Brown Darwin Botanic Gardens following his recent study leave, and I look forward to working with Ben on some new projects in the years ahead.

I hope you enjoy this report and the many Partner achievements this year. Next year is shaping up to be just as exciting, and I look forward to sharing our ongoing successes.

Damian Wrigley
National Coordinator

PROFILES OF OUR PEOPLE

Bradley Desmond, Assistant Coordinator, Australian Seed Bank Partnership

Bradley Desmond

Growing up in country Western Australia, I've always had an affinity for the bush – nothing is more soothing to me than watching the golden light of sunset reflecting gently off the leaves of a gum tree. This connection, coupled with the current decline in global biodiversity, drove me to study Conservation Biology at the University of Western Australia. During my studies I was given the opportunity to complete a summer research project with the CSIRO Plant Industry in Brisbane, and undertake environmental compliance on a gold mine in the stunning Great Victoria Desert. These experiences distilled my interest in plant biology which I utilised to complete my honours project focusing on functional trait correlations of Myrtaceae and Proteaceae species in Kwongan shrubland.

My first role after study involved restoring Woodland and Samphire Threatened Ecological Communities on Rottnest Island as part of the Green Army Program. This incredibly rewarding experience spurred my curiosity about the influence of policy on environmental outcomes in Australia, and motivated me to apply for the graduate program with the Commonwealth Department of the Environment. As a graduate I was lucky to be stationed on Christmas Island for three months, where I planned and conducted the annual Flying Fox population survey. As a graduate I also worked on the Bioregional Assessment Program, which assessed the potential impacts of coal mining on water resources, as well as on completing Commonwealth environmental assessments for development referrals under the EPBC Act

After completing the graduate program, I took a position with Parks Australia, where I worked on reviewing the agency's performance criteria and produced Corporate Plans, Annual Reports, and Park Management Plans. When the position with the Partnership was advertised, I jumped at the chance to do my bit to conserve Australia's native plant diversity. After a year in the position I'm still humbled by the work of our Partners, and remain inspired to facilitate and communicate the amazing work they do.

Meg Hirst, Post-Doctoral Fellow, Victorian Conservation Seedbank

Meg Hirst

I was working in the Royal Botanic Garden Victoria (RBGV) nursery looking after the research collection, and it was there that I was introduced to the 'wild side of horticulture', going on field trips and seed collecting with the folk from the Science Division. I had never experienced 'botanising' before and found it immensely fulfilling, returning to the nursery with precious plant material to propagate and care for. When I heard the RBGV was to establish a conservation seedbank and was recruiting, I jumped at the opportunity to apply for the position of technical assistant. I was eight months pregnant, but applied anyway, and I don't think my feet touched the ground when I heard I was successful.

Returning from maternity leave, I started my new position working alongside Jeff Jeanes and Neville Walsh. It was a fantastic and memorable time; going on field trips; working in the seed lab; and meeting so many people involved in plant conservation. My direction changed somewhat when I attended my first Seed Ecology Conference held in Western Australia. Sitting in the auditorium and hearing such amazing speakers talk about their seed research, I was blown away, and I knew then that I wanted to take my studies further.

It took some time to get there though. I reconnected with the University of Melbourne and continued working in the Victorian Conservation Seedbank. I finished my degree, rolled on to Honours, and finally completed my PhD in 2018 under the supervision of Prof Ary Hoffmann. Since that time, Jeff Jeanes has retired and the dynamic Dr Andre Messina has taken the helm.

I am so glad I made the decision to apply to be a seed tech all those years ago. The path I have taken challenges me daily, but it is very rewarding, as I have met awesome seed scientists, like Carol and Jerry Baskin, and have sat with my lunchbox in some pretty wild places. I am now working as a Post-Doctoral Fellow at the Victorian Conservation Seedbank and, in partnership with Deakin University on an Australian Research Council (ARC) linkage project, am investigating germination and dormancy in select alpine species. I was honoured to be involved in the 3rd Edition of ANPCs *Plant Germplasm Conservation in Australia*, especially as I was privileged to work with Dave Merritt and Shane Turner, both of whom I met way back at that first Seed Ecology Conference and have been citing ever since!

Gemma Hoyle, Project Officer, National Seed Bank, Australian National Botanic Gardens

Gemma Hoyle

I joined the RBG Kew's Millennium Seed Bank (MSB) at Wakehurst Place in 2001 which was a very exciting time to be introduced to *ex situ* conservation and seed banking. I became hooked on the MSB's aims, problem solving through experimentation on seeds and working with like-minded people.

From there I took the amazing opportunity to do a PhD at the University of Queensland as part of the MSB-Australia partnership. I researched dormancy and germination of forbs of south-west Queensland to inform their use in mine site rehabilitation. Seed collecting in Cunnamulla was an eye-opening introduction to Australia! Thankfully, after completing my PhD, Kew encouraged me to stay in Australia and continue to grow my interest in Australian seeds.

In 2008, with support from the Australian National Botanic Gardens (ANBG) and the ANU, I decided to write an ARC Linkage grant proposal for post-doc research into Australian alpine seeds and seedlings. Thankfully this work was funded, and research links between the National Seed Bank (NSB) and ANU were established and continue today. Highlights of my post-doc included our regular field trips to Kosciuszko National Park, growing the number of alpine seed collections in the NSB, and attending the 2010 Seed Ecology Conference in Salt Lake City, Utah.

After some years away from paid work to care for my babies, I found that I still cared about seed banking and began volunteering at the NSB. In 2020 I happily joined the NSB team as Project Officer. Since then, bushfires, hailstorms and COVID-19 lockdowns have only made us more determined to deliver on our worthwhile projects, such as informing seed-based restoration of critically endangered native grasslands and investigating germination and storage of endemic tropical mountain cloud forest seeds. It's been a privilege to be involved in the design of a new NSB building, and in planning for this year's Australasian Seed Science Conference hosted by the ANBG, and I look forward to designing and implementing many more seedy experiments in the future.

Scott Pullyblank, Curator Life Sciences, Alice Springs Desert Park

Scott Pullyblank

I learnt my first scientific name when I was 11 – *Eucalyptus camaldulensis*. TThe family brought a seedling back from a holiday in central Victoria. To my father's annoyance, it grew taller than the eaves of our house and eventually, while still a sapling, it came down on the neighbour's shed in a storm. But I was now hooked on native plants. The rest of the garden was all camellias, roses and rhododendrons. F.J.C. Rogers' book, *Growing Australian Native Plants*, followed by Cochrane, Fuhrer, Willis and Rotherham's Flora of Victoria, did for me with plants what Gould's works did for me with native animals, and it went with me on my family's camping trips to the magical bush.

I graduated from Monash University in 1978, majoring in Botany and Zoology. One of my prac partners in Botany was a fellow with wild red hair named Neville Walsh, whom some of you may know.

I became a teacher, and later was seconded into the Zoos Victoria Education Service as an Environmental Education Officer. I spent 16 years there, most of which was in the natural bush setting of Healesville Sanctuary just down the road from the site of my first *Eucalyptus camaldulensis*.

During that time, I developed a strong philosophy of 'landscape' and the connectivity within landscapes (being a bit of an old hippy Gaia fan). At uni, Ecology was only taught as a single unit, not as an area of study. However, I was drawn to that approach, and the attraction continues. So I may collect a plant specimen or have an animal brought into the Alice Springs Desert Park collection – where I have been Curator of Life Science (the Botanical and Zoological) for 14 years – but I am always seeking out the ecological connections associated with these plants and animals, and 'reading the landscape' is a major passion of mine. For instance, seeking the link(s) between those animals that dig and fossick for food in the soil, i.e. bettongs and bandicoots, now missing over so much of our landscape, and their effects on soil nutrients, mycorrhiza and fuel levels at ground level and the basic health of those systems. The 'reading' includes an onsite appraisal of a site by looking at the plant species present, where they are in that landscape, and being able to infer or extrapolate other information about that place from those observations – 'Reading the Landscape'. And what a great place to do this, Central Australia, where people have read the landscape for thousands of years and continue to do so.

WHO WE ARE

Our Vision

A future where Australia's native plant diversity is valued, understood and conserved for the benefit of all.

Our Mission

A national effort to conserve Australia's native plant diversity through collaborative and sustainable seed collecting, banking, research and knowledge sharing.

The Australian Seed Bank Partnership is a national collaboration of conservation seed banks, and flora-focused organisations in Australia and the Millennium Seed Bank in the UK. Our dedicated Partners and Associates undertake widespread collecting and complex research to support fundamentally important *ex situ* seed conservation, as well as the critical seed science that underpins these efforts. In 2020–21 this involved a significant response to the devastating 2019–20 bushfires. Affecting almost 20 million hectares, these events have increased interest in the work of seed banks from Government, industry and the general public.

Ex situ seed banking is the principal tool for the safe and efficient storage of wild plant genetic material. This cost-effective method for maintaining genetically diverse and representative collections of the Australian flora requires a sound understanding of seed harvest, storage and germination. Our seed collections are held across a network of seed banks to enable a strategic approach to storage, conservation and research of our incredibly diverse flora. Our Partners generously provide resources and knowledge that support the management of plant species and communities, and our collaborative efforts offer an insurance policy against further loss. Our native flora faces an uncertain future due to many threats, including a rapidly changing climate, biological invasions, land clearing and severe weather events. The work of the Partnership will only continue to be more important.

We contribute to national efforts to empower others to deliver their *ex situ* conservation endeavours to the highest standards. We also ensure our experts across the country contribute to the development of policies, programs, research and on-ground projects that seek to improve biodiversity outcomes for Australian flora and fauna. We do this by sharing our knowledge and expertise in various forums as well as through the review and update of national guidelines and standards that aim to develop capacity and skills across the sector for plant germplasm conservation. This year, substantial effort was directed to the development of the second edition of the Florabank Guidelines, and the third edition of the Germplasm Guidelines. When finalised, these will be important tools to showcase the latest techniques, literature and procedures for optimising germplasm storage and use.

We are very grateful to our many generous supporters in government, philanthropy and industry, as well as the individual donors that support our work. Much of our work is also supported by volunteers and students who work with our collectors, curators and scientists to ensure Australia's endangered, endemic and economically important species are provided with the best chance to survive in an uncertain future.

Staff at the PlantBank undertook Rapid flora assessments of *Chiloglottis anaticeps* in Werrikimbe National Park under Project Phoenix (Image: Gavin Phillips).

We welcome opportunities to further build on our collaborative efforts across the conservation, restoration and botanic gardens networks. We continually strive to deliver on our shared objectives of seed banking and seed science, on sharing knowledge and building the capacity across the seed conservation community. The Partnership's upcoming 2021 Australasian Seed Science Conference will provide an exciting opportunity to showcase recent learnings in seed research, and engage with experts in the Asia-Pacific region.

The Partnership is committed to ensuring we deliver our *ex situ* conservation programs and projects to the highest standards, following internationally recognised protocols for collecting and storing the seed of Australian native plants, with all Partners assessed against the Millennium Seed Bank Partnership's Seed Conservation Standards.

Seedbank Officer Gavin Phillips collecting *Leucochrysum graminifolium* (Pagoda Daisy) at the Lost City in Newnes State Forest, NSW (Image: Laura Watts).

We continuously strive to improve the collection and curation of our data. We record environmental data crucial to our role in plant conservation and aim to make it openly available through the Australian Seed Bank online and through jurisdiction-specific websites. We are continuing to seek funding and opportunities to improve our data sharing to support the utilisation of seed collections for research and restoration.

Our seed science endeavours are critical for understanding seed biology and ecology, as well as for developing germination protocols and tackling dormancy or seed storage challenges. By building this knowledge base, we aim to help practitioners restore vital plant communities throughout Australia's diverse landscapes. Over many years and many more field trips, our Partners and Associates have secured seed from a wide variety of taxa across many unique and challenging landscapes. Our Partners hold seed from every state and territory, including our island territories in the Indian and Pacific Oceans. These important collections will continue to provide vital clues to the evolution and adaptability of native species as we continue to undertake further research and restoration projects across the country.

We welcome collaborations with individuals, organisations and governments around Australia and further afield to support the conservation of Australia's unique and diverse flora. It is our hope that as we collectively share our knowledge and skills, we will be capable of overcoming many future challenges and threats and create a future where Australia's plant diversity is recognised for the ecosystem services it supports across the continent.

Neville Walsh and Andre Messina (RBGV) with Michelle Doherty (Parks Victoria) assessing *Lobelia gelida in situ*, Mt Buffalo (Image: Royal Botanic Gardens Victoria).

AUSTRALIAN SEED BANK PARTNERSHIP HIGHLIGHTS FOR 2020–21

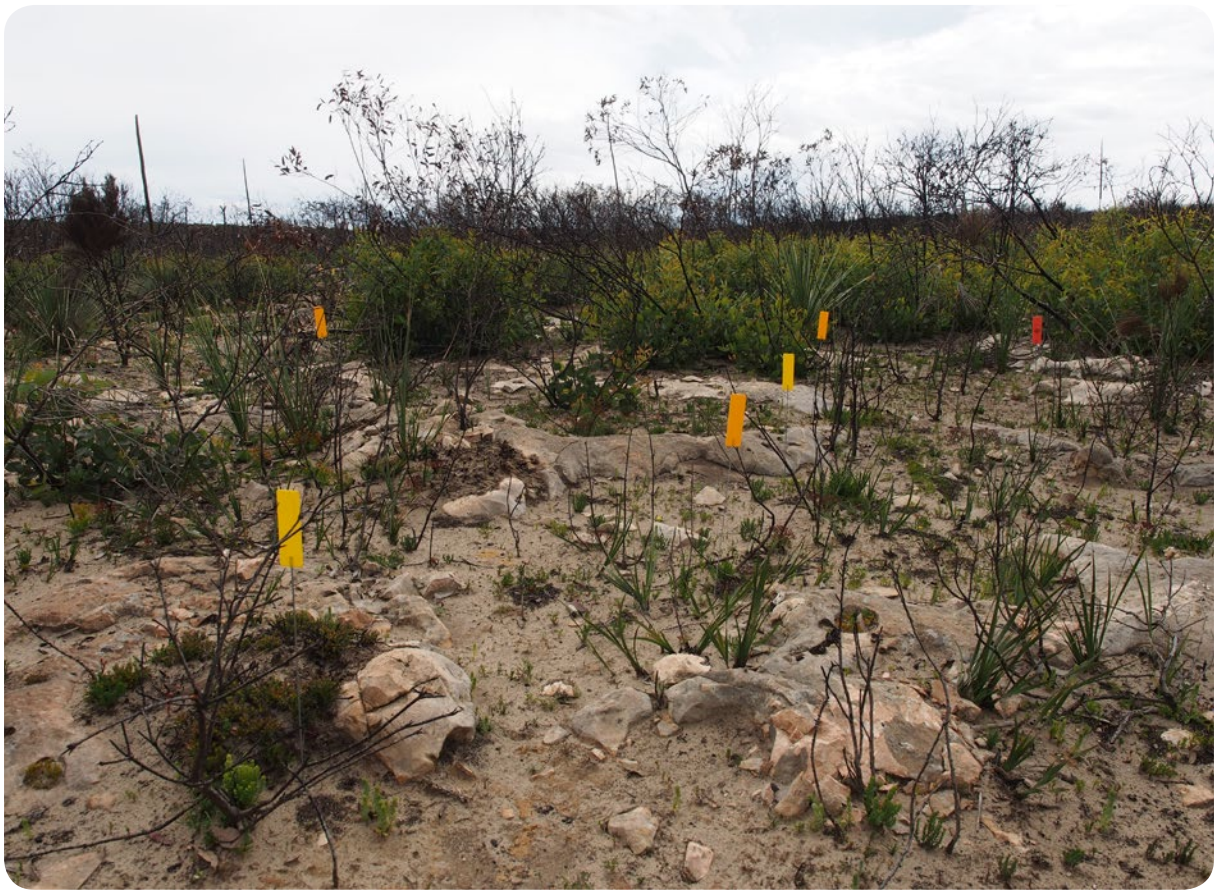
Bushfire recovery on Kangaroo Island

From September 2020 to June 2021, staff from the South Australian Seed Conservation Centre (SASCC) undertook seven field trips on Kangaroo Island, to complete activities for several bushfire recovery projects.

This fieldwork achieved a total of 86 seed collections for 59 species with over three hundred herbarium specimens collected by June 2021. This included seed collections for seven endangered, 11 vulnerable and 27 rare species for South Australia. Also, several historic records were rediscovered with five new species records for Kangaroo Island.

A total of 44 rapid flora assessments were completed for 35 plant species to gain an understanding of fire response – such as the number of seedlings produced and the capacity to resprout from tubers/rhizomes. These assessments also measured fire severity, species association and observed threats.

The SASCC was fortunate to be supported by many expert volunteers on field trips, and this season it included the Partnership's National Coordinator Damian Wrigley, who joined the January trip to Kangaroo Island. It was an opportune time to visit some of the pristine swamps that were accessible in the post-fire landscape. Threatened species collected in perched swamps during the season included *Diuris brevifolia*, *Utricularia lateriflora*, *Prassophyllum australe*, *Cryptostylis subulata*.



Rapid flora surveys undertaken at Cape Borda, Kangaroo Island were important post fire to record *Olax obcordata* recovery (image: Dan Duval).

In future 2021–22 surveys, assessments and collections will be undertaken for threatened species that will be more readily identifiable and will be flowering/fruiting in the second and third years post-fire. This second phase will also provide an opportunity to further develop germination protocols for collections of new and difficult-to-grow species and provide threatened plant species for planned recovery projects. A threatened species 'Seed Production Area' (SPA) is planned for the Cygnet Park on Kangaroo Island. These living collections will represent multiple population collections with diverse sample numbers for specific threatened species. The SPA will be a resource for research, for future recovery projects on Kangaroo Island, and to allow future seed to be banked at the Botanic Gardens and State Herbarium of South Australia.

Securing difficult species in Kosciuszko National Park

Over the course of the past year, the National Seed Bank (NSB) at the Australian National Botanic Gardens (ANBG) conducted collection activities across a diverse range of ecosystems – from alpine herbfields, sub-alpine bogs and fens, and temperate grasslands, to coastal heath and tropical mountain-cloud forests. Their collection efforts were made largely in response to the impact of the unprecedented 2019–20 bushfires.

With support from Project Phoenix, the NSB was able to allocate resources and time to collecting seed in remote areas of Kosciuszko National Park between February and May 2021. This included areas such as Mt Jagungal Wilderness Area and Bimberi Wilderness Area, which were fire-impacted and had been the focus of minimal collection activity in the past. This project also enabled the NSB to target species that can be difficult to collect due to their rarity, the habit of their growth, the nature of their seed production, accessibility within their habitat, lack of collection data, and unpredictability of seeding times. Such species included *Galium roddii*, *Dillwynia palustris* and *Epacris glacialis*. *Galium roddii* is a small perennial herb found in the cracks and crevices on the limestone cliffs of Clarke Gorge within Kosciuszko National Park. This tenacious plant is battling to hang on to its habitat, which is under threat from invasion by weeds. The NSB was able to secure collections in February 2021 at the peak of the plant's seed production, despite the difficulty of the terrain.

Dave Albrecht from the Australian National Herbarium collected *Galium roddii* in Clarke Gorge, Kosciuszko National Park (Image: Tom North).

Project Phoenix enabled the NSB to have extra people on the ground for seed collection, with both contract seed collectors and their NSB Seedy Volunteer program. Some of the bigger collections made included the following taxa: *Ozothamnus hookeri, Oxylobium ellipticum*, *Carex appressa*, *Callistemon pityoides* and *Carex gaudichaudiana*. Whilst some of these taxa are common they are important collections in terms of the key role they play in the structure of EPBC listed endangered ecological communities such as alpine bogs and fens. Use of these collections in future research will help us understand how these taxa respond to fire.

NSW in bloom

The 2020–21 season was filled with opportunities for the Royal Botanic Garden and Domain Trust's team at the Australian PlantBank. It was the first full season after the devastating 2019–20 fires and saw the breaking of the drought that had heavily affected NSW. Key collecting trips covered large areas including Western NSW, the Monaro Plain, the Australian Alps and the New England Tablelands.

The replenished rivers and lakes after drought provided optimum seed collection conditions in Western NSW. The PlantBank team seized this opportunity and undertook several trips into the region enabling the first ever collections of several highly ephemeral and poorly recorded threatened species. These trips also facilitated the discovery of several new species populations, the rediscovery of several historical or presumed lost populations, and the collection of a substantial amount of material to support development of living collections within the Royal Botanic Gardens and Domain Trust estate.

Highlights included the first seed collections of the highly ephemeral *Goodenia nocoleche* and *Dentella minutissima* from Nocoleche Nature Reserve and Toorale National Park; rediscovery and collection of *Oldenlandia galioides* and *Pterostylis cobarensis* in Gundabooka National Park; first ever seed collection of the rare-to-fruit *Acacia carneorum* from south of Menindee; and securing *Ipomoea polymorpha*, *Xerothamnella parvifolia* and *Atriplex sturtii* for the first time from Sturt National Park and surrounding area.

Seeds of *Acacia carneorum* (Purplewood Wattle), a species never before collected for conservation seed banking. This species mostly exists in sterile, clonal clumps across arid NSW and SA, with very few stands known to ever produce fruit (Image: Gavin Phillips).

Recovery from fire and drought resulted in ideal conditions for multi-provenance collections of rare and threatened terrestrial orchid taxa from a number of regions in NSW. This included species such as *Prasophyllum innubum*, *Prasophyllum keltonii* and *Thelymitra alpicola* from the firegrounds of the Bago Plateau and Kosciuszko National Park and *Caladenia arenaria, Caladenia callitrophila* and *Prasophyllum* sp. *Moama* from a green Riverina. The endangered Bird orchid, *Chiloglottis anaticeps* was observed in mass flowering from firegrounds on the Northern Tablelands, with population estimates at one site beyond 30,000 individuals, exceeding the previously recorded estimate of less than 100.

Collaboration for rare Callistemons

The Royal Botanic Gardens Victoria (RBGV) has continued to foster links with numerous external organisations to share knowledge, to work collaboratively and expand our capacity to undertake conservation projects. This includes landcare groups (e.g. Upper Murray Landcare Network and East Gippsland Landcare Network), Friends of Mallacoota, Traditional Owner groups (Moogji Aboriginal Council) and regional botanic gardens and seed banks (e.g. Ballarat Botanic Gardens and Euroa Arboretum). Through collaboration and knowledge transfer we continue to help set up regional seedbanks (particularly in fire-affected areas), providing seed and growing plants for conservation projects, supporting funding applications and storing seed from seed orchard projects (e.g. storing seed of *Lepidium hyssopifolium* being propagated by Ballarat Botanic Gardens). We recently were involved in a seminar series for the Victorian State Wide Integrated Flora and Fauna Teams (SWIFFT), expanding our audience and enabling further communication about our role in *ex situ* seed conservation, linking to further collaborative efforts with regional organisations.

We are happy to report that through these collaborative efforts, three rare and threatened Callistemon spp. from bushfire-affected areas in East Gippsland have been replanted using banked collections. We used banked seed as fresh seed collections will not be possible for some time, fires having burnt the entire distribution of these species. From our collections, we tested the viability and germination responses using a broad temperature range

and six germination cabinets. All seedlings produced in the many petri dishes used in these trials were retained and transferred to grow on under the horticultural care of the RBGV Cranbourne nursery. Communication with on-ground facilitators for landcare and community groups enabled new plantings of *Callistemon forresterae*, *C. nyallingensis* and *C. kenmorrisonii* back into their natural areas, with a few plantings spotted around public spaces such as a community health centre and a community hall as well as plantings by local landowners.

Kieran Martin of East Gippsland planting tubestock of *Callistemon forresterae* (Image: Max Elliot).

Myrtle Rust preparedness in Western Australia

Myrtle rust (*Austropuccinia psidii*), a fungal disease that threatens plants in the Myrtaceae family, hasn't yet been recorded in Western Australia, but is already having a negative impact on the flora of the Australia's east coast. In preparation for a potential incursion of the disease into Western Australia, a project funded by the WA Department of Primary Industries and Regional Development was undertaken to collect conservation-significant plant species from areas identified as likely to be suitable for Myrtle rust establishment. This included areas of high floral diversity such as Stirling Range National Park and Fitzgerald River National Park.

A primary goal of this project is to conduct collections across a broad cross section of the species' range to gather a good representation of the genetic diversity within a species. Future collecting activities will focus on increasing the number of populations from which seeds are sourced. Both annexes of the Western Australian Seed Centre (WASC) took part in the project.

Verticordia fimbrilepis subsp. *australis* and *Darwinia macrostegia* were collected as part of the WA Myrtle rust project (Images: Andrew Crawford).

Over the last year, the WASC Kensington annex secured 57 seed collections for 49 species of conservation significance from the Myrtaceae family. During 56 days in the field, the WASC Kings Park annex made 73 collections of 66 species. Many of the species collected were new to the conservation seed collections. Where collections of a species already existed, priority was given to species where current seed stocks were considered insufficient for the long-term conservation of the species, or to broadening the population diversity of collections.

These collections are now in safe keeping at the WASC. Where collections of these species are of a sufficient size, they will be duplicated to the Royal Botanic Gardens, Kew's Millennium Seed Bank as additional insurance. There are already plans to utilise some of the collections for translocating species back into the wild to improve plant numbers, and it is hoped that the larger collections will be able to be used to initiate screening trials for the susceptibility of the species to Myrtle rust.

Tasmania two years post fire

The 2018–19 fires consumed over 200,000 ha of land in Tasmania, with many native herbs and some shrubs now regenerating strongly. This gave the Tasmanian Seed Conservation Centre (TSCC) the opportunity to make good-sized seed collections this year, with 32 of their 57 collections harvested in and around fire-impacted areas. Of these collections, 13 new species were collected, including *Carex cephalotes* – a rare and very restricted snow-patch sedge that was recorded in Ben Lomond National Park from four individual plants. Extensive surveying in January 2021 uncovered no additional plants, but resulted in a collection of 200 seeds.

Surveys were also undertaken at Mount Tim Shea, where 35,000 ha of habitat were burnt by the Gel River blaze. Here a large collection (161,000 seeds) was made of the endemic daisybush, *Olearia persoonioides* and of theendemic herb *Anemone crassifolia*.

Olearia persoonioides flowering in burnt scrub on Mount Tim Shea, Tasmania (Image: James Wood).

Australian Seed Bank Partnership featured at the Australian Tourism Exchange 2021

The Australian tourism sector was hit hard over the past 18 months following the disruptions to travel caused by COVID-19. With border restrictions easing in early 2021, the Australian Tourism Exchange 2021 was held in Sydney to help reinvigorate the sector. The event welcomed tour operators and agencies from around Australia, as well as some of the luckier tourism experts from overseas who could make it to Sydney for this normally annual event. As part of the week-long event, the Partnership's bushfire recovery work was featured, with an installation promoting Australia's expertise in ex situ seed conservation.

As well as promoting the work of the Partnership, Belle Laide Events, who helped Tourism Australia run the meeting, incorporated hundreds of potted native plants to bring the unique feel of the Australian bush directly to delegates. Following the event, the native plants were donated to the Community Greening team at the Royal Botanic Gardens Sydney to support their work with schools, early childhood centres and community groups in bushfire-affected areas in Southern NSW. This generous donation ensured each native plant used across the venue could be repurposed for the benefit of those affected by the bushfires.

The Partnership extends its thanks to Mark Taylor and his team at Belle Laide Events, as well as the Australian Tourism Exchange 2021, for supporting the work of the Partnership and the broader ex situ conservation community.

Partnership projects featured at the Australian Tourism Exchange 2021 included the Rare Bloom Project™ funded by WWF Australia, and Project Phoenix and the Banking on Seeds for Bushfire Recovery project funded by the Australian Government.

GOALS AND ACHIEVEMENTS

The Australian Seed Bank Partnership's national program to conserve Australia's native plant diversity has five goals. The Partnership's 2011–20 Business Plan identifies strategies, actions, priorities and outcomes under each of the goals that guide our work. These outcomes help us to maintain focus and ensure our work is relevant to our vision of 'a future where Australia's native plant diversity is valued, understood and conserved for the benefit of all'. The impact of bushfires and COVID-19 hindered our next strategic plan being finalised by the end of 2020. We have therefore continued to deliver and report under the existing goals for the 2020–21 financial year.

Goal 1: Collecting and storing seed in secure seed banks as long-term insurance against loss of plant diversity

Re-discovery after Kangaroo Island bushfires

The 2019–20 fires burnt nearly half of Kangaroo Island, opening up woodlands and swamps that were difficult to access before the fire. This increase in accessibility coupled with the support from bushfire recovery funds allowed the South Australian Seed Conservation Centre (SASCC) to collect seed from fire-ephemeral species that were new records for the island or that had only one or two historical records.

For example, *Chenopodium erosum* was known in South Australia from a single disjunct 1950 collection by J.B. Cleland. However, local botanists helped locate two populations in a fire scar on the south-west end of Kangaroo Island, where subsequent rapid flora assessments were undertaken and over 300,000 seeds were collected. This plant was also the feature of an episode of *Gardening Australia* on ABC TV in April 2021.

Plants newly recorded on the island include *Rorippa gigantea,* an endangered cress found along two minor creeks in Flinders Chase; *Gonocarpus humilis*, a rare swamp raspwort; and *Trithuria australis*, a small aquatic plant observed at Larrikins Lagoon growing with many other rarely recorded plant species.

Several orchid species were also detected after the fire, with seed collections being made from two small populations of the Shy Gremlin orchid *Caladenia transitoria* subsp *isolata,* the bearded swamp orchid *Calochilus paludosus,* and the critically endangered Black-beak Duck-orchid *Caleana disjuncta*. The Black-beak Duck-orchid was known from two 30-year-old historic records on Kangaroo Island, and is believed to have been cryptic in the intervening years as small leaves and tubers hidden under heath.

Several of these species were found by Kangaroo Island botanists, thereby highlighting the value of sharing historical records, habitat descriptions and plant or specimen photos with experts within the local community. The SASCC wishes to extend thanks to Andy Young, Alison Buck and Michelle Haby, who recorded new and historic plant populations on the island. This considerably reduced the prerequisite search effort required to collect target species during field work on the island.

Numerous new plants were recorded in burnt areas of Flinders Chase, Kangaroo Island (Image: Dan Duval).

Cross-state cooperation for conservation

In the last year, the National Seed Bank (NSB) was involved in a number of projects that helped to safeguard Australia's flora and thereby contribute to the goals of the Partnership.

The NSB was engaged by Local Land Services (LLS) in the Central West and Central Tablelands of NSW to assist with conservation of endangered species in ACT, NSW and VIC including the Small Purple Pea (*Swainsona recta*). The project aimed to collect, bank, propagate and translocate these species following protocols outlined in the third edition of the Germplasm Guidelines[1]. In the first year of collection (2020–21) the NSB, with the help of LLS staff and volunteers collected 8,000 *S. recta* seeds. These were assessed and banked and propagated, with results indicating that the species has very poor germination and seedling vigour, possibly due to inbreeding depression within the small remnant populations. To achieve the required plant numbers for translocation the NSB utilised a greater proportion of the banked seed than planned, however subsequent collection events and the planned establishment of a seed production area will help address these issues. As part of the project, the NSB delivered workshops aimed at educating landholders in the NSW central west to identify and manage *S. recta* for conservation.

Through another multi-partner project, led by James Cook University, the NSB is involved in helping to secure the future of Australia's climate-threatened tropical mountaintop plants. The project uses a meta-collection *ex situ* conservation strategy to 'back-up' at risk wild populations amongst several major botanic gardens (Australian National Botanic Gardens, Royal Botanic Gardens Victoria, Brisbane Botanic Gardens, Blue Mountains Botanic Garden and the Australian Botanic Gardens Mt Annan). Seed banking, research and education are major focuses of the strategy; however, little is known about which species have desiccation-tolerant seeds to enable long-term storage, and how predicted climate change will affect the factors that control regeneration of seed *in situ*.

The Ian Potter Foundation grant for this project has allowed collaborative research of these species at the NSB and the Australian PlantBank, particularly research into the effects of changing temperatures and light quality on germination of seeds to better inform future models of the impact of climate change.

Seed collectors from the National Seed Bank securing *Oxylobium ellipticum* on Mt Jagungal, Kosciuszko National Park (Image: Jarrod Ruch).

On a mountain high in the Stirling Ranges

In the summer of 2019–20 a wildfire burnt through a large part of the eastern portion of WA's Stirling Range National Park (SRNP), including the Threatened Eastern Stirling Range Montane Heath and Thicket Ecological Community. This community had already been impacted by fire in 2017–18 and only a small number of mature individuals of some threatened species remained in isolated pockets of unburnt vegetation in the upper reaches of the range.

1 Martyn Yenson AJ, Offord CA, Meagher PF, Auld T, Bush D, Coates DJ, Commander LE, Guja LK, Norton SL, Makinson RO, Stanley R, Walsh N, Wrigley D, Broadhurst L (2021) 'Plant Germplasm Conservation in Australia: strategies and guidelines for developing, managing and utilising *ex situ* collections. Third edition.' Australian Network for Plant Conservation, Canberra.

The Western Australian Seed Centre, Kensington undertook a range of projects, supported by the Partnership, to help safeguard these species from extinction.

Seed collections were made from nine threatened plant species that grow in the SRNP as part of Project Phoenix. These collections supplemented existing collections for these species, adding to both the quantity of seed in storage, and to the genetic diversity of the collections.

For conservation seed collections to be of value it is important to know the viability of the collections when they go into storage, and to be confident that the viability of those collections is being maintained. The 'Banking of seeds for bushfire recovery' Project allowed for germination trials to be conducted on five species of conservation significance. For some of these species it was the first-time germination tests had been conducted. For other collections the tests focused on the viability of seed that had been in storage for between 16 and 27 years to check if any decline had occurred. The reassuring result was that of the 10 collections representing three species, only one *Darwinia squarrosa* collection exhibited a significant viability decline, with collection quality likely to blame.

The germinants produced from this testing work were all utilised for a range of recovery actions. Two species, *Andersonia echinocephala* and *Banksia solandri,* were used in a trial planting near Bluff Knoll in SRNP to see if plants can be successfully established back into their natural habitat.

Seedlings were airlifted to East Bluff, Stirling Range NP, for the 'Banking on seeds for bushfire recovery' project (Image: Andrew Crawford).

Two species, *Darwinia squarrosa* and *Banksia solandri,* were also planted into seed orchards with the aim of boosting seed stocks of the species. Finally, one species, *Banksia foliolata*, was incorporated into the living collections of Kings Park Botanic Garden.

Goal 2: Conducting research to improve both conservation and restoration outcomes from seed banking

Germinating desert flora

Collecting either cutting material or seed in the Northern Territory is generally dependent on rain. There usually needs to be a series of rain events for good growth, flowering and seed production of many arid species. The time of year when the falls occur also has a major influence on which species begin their reproductive cycle. In the last few years, the lack of favourable rainfall has severally hampered the Alice Springs Desert Park's (ASDP) ability to collect seed form target species. The time of year when the falls occur also has a major influence on which species begin their reproductive cycle. In the last few years, the lack of favourable rainfall has severely hampered the ability of the Alice Springs Desert Park (ASDP) to collect seed from target species.

Preparing seeds for germination and storage are important steps in the long-term *ex situ* conservation process. Knowing how to properly germinate and store seeds is critical to being able to use our collections in the future for restoration of the species *in situ*.

Shifting its focus from collections, the ASDP instead dedicated time to maintaining germination trials associated with their seed bank. These trials take place to determine methods of overcoming long-term dormancy in species, and to keep track of the viability of the stored seed. If a collection loses its viability, ASDP will target that species for future collections to maintain viable insurance collections. These seeds may become very precious should they be required for the re-establishment of a species or a population in the future. In 2020–21, 74 species were trialled from a total of 841 collections currently stored.

Research at Kings Park

Research highlights over the past year for the Western Australian Seed Centre, Kings Park include the awarding of a new four-year Australian Research Council grant to study seed longevity in storage, with specific goals that include identifying short-lived seeds and seeds with problematic storage behaviour. The project will continue recent work examining respirometry as a measure of seed metabolism and a technique for the early identification of seed collections that are declining in viability. Through a focus on viability testing of old accessions of seeds stored for many decades within the WA Seed Centre, the project will also examine hypotheses regarding the type of seeds that may be long-lived or short-lived.

Other activities included testing of some of the older seed collections held within the bank, including collections from species impacted by fires during 2019–20, under the Partnership's 'Emergency seed collecting fund to save Australian native flora' Project. Seeds from 41 species, originating from areas impacted by fires in the Kimberley, Pilbara, Wheatbelt, and Great Southern regions of Western Australia and collected between 1991 and 2015, were retrieved from storage for viability testing. Through X-ray imaging and germination trials, 26 of the species were successfully propagated, based on the criterion of achieving at least 75 per cent germination. Germination trials had not previously been attempted for many of these species, and protocols for germination have now been established.

A highlight was the successful propagation of the palm *Livistona leichhardtii* from seeds originally collected from the remote Kimberley in 2003, as well as propagation of the Ironwood, *Erythrophleum chlorostachys*, with the resulting seedlings being moved to the nursery at Kings Park to grow for the first public displays of these species in the Botanic Garden.

Seedlings of *Livistona leichhardtii* have been successfully propagated for the first time from seeds collected and banked in 2003, and are being grown for display in Kings Park and Botanic Garden (Image: David Merritt).

Seedlings of the Ironwood, *Erythrophleum chlorostachys*, germinated for the first time from seeds collected in the Kimberley in 2015, growing on for display in Kings Park and Botanic Garden (Image: David Merritt).

The year also saw the completion of two PhD student projects with a focus on the use of seeds for mine-site restoration in the Pilbara region of WA. One project, in partnership with UWA Engineering, saw Monte Masarei focus on the design and construction of direct seeding machinery tailored to the sloped and rocky landscapes common to mine sites. Field trials conducted over the past three years yielded positive results, facilitating a new UWA PhD project to commence in 2021 on automation of this seeding machinery.

Amber Bateman, the second UWA PhD candidate, examined the capacity of soil amendments in use by the mining sector to enhance the quality of mine waste substrates and improve seedling recruitment. This project found that inorganic amendments such as urea and gypsum can improve soil quality in the short-term and increase plant growth in some (but not all) species. It also found that these effects decline as water becomes limiting, and higher doses of these amendments can limit seedling emergence, so the timing of application is important.

Goal 3: Developing national standards and improving capacity to enable conservation and restoration of biodiverse and resilient ecosystems

Capturing post-fire response with consistent assessment methodology

The combination in NSW of the recent drought and the loss of 37 per cent of the state's National Park estate in the 2019–20 fires has put many plant species at risk. With support from Greening Australia's Project Phoenix, the Banking of Seeds for Bushfire Recovery Federal Grant and funding from the UK Government, the Australian PlantBank played a vital role in the assessment and conservation of NSW rare, threatened and endemic flora.

Immediately after the fires, PlantBank staff realised the need for a rapid flora assessment tool with which to triage the daunting number of taxa identified as potentially affected by the extensive fires. Utilising the field experience of

Raised vegetation beds installed at a field station in the Pilbara constructed to examine effects of inorganic amendments and plant community type on mine waste substrate properties and plant growth over a three-year period (Image: David Merritt).

PlantBank's collectors, a pro forma was developed with which any population of plants could be assessed for fire impacts, allowing for estimates of when or if seed collections would be viable, and capture other vital information to pass on to land and conservation managers. The tool was rolled out to the Partnership to assist in recording vital information.

In NSW, 52 assessments were undertaken across the state in 2020–21 for various projects, often in lieu of collections when seed was not available. These assessments provided a key link between seed collectors in the field and conservation managers, as the data gathered by collectors was disseminated for a variety of uses such as developing on-ground actions, supporting research projects, prioritising conservation projects and assessing taxa for threatened species listings. The expertise of the field collectors in locating the target taxa, recording relevant information and contributing to conservation actions proved invaluable for these outcomes, further increasing the profile of both the PlantBank's and the Partnership's work among our public and private sector project partners. As a result of the assessments, several species were found to be intact and healthy or even increased in number despite initial fears. Others, however, were found to have suffered greatly and are now being considered for further conservation action. For example, after assessment by PlantBank staff, the non-listed narrow-range endemic, *Eucalyptus paliformis* (Wadbilliga Ash), was found to be teetering on the edge of extinction, and its status is now being re-assessed for listing under the EPBC Act. Many of the fire-affected species will need continuous monitoring, additional research, and carefully managed seed collection for survival.

The entire known population of the rare *Eucalyptus paliformis* (Wadbilliga Ash) was burnt in the 2019–20 fires and now a new threat has emerged through the incursion of other Eucalypts species into the once pure stands.This was recorded thanks to the rapid assessment work carried out by the Australian PlantBank (Image: Gavin Phillips).

Launch of the Germplasm Guidelines

The Australian Network for Plant Conservation Inc. (ANPC) led the collaborative effort to update the third edition of *Plant Germplasm Conservation in Australia – strategies and guidelines for developing, managing and utilising ex situ collections* (known as the Germplasm Guidelines). The new Germplasm Guidelines are a project of the ANPC and the Australian Seed Bank Partnership with input from the restoration and agriculture sectors, botanic gardens, CSIRO and universities. Dr Amelia Martyn Yenson led the update for the ANPC, seeking input from a range of experts around Australasia.

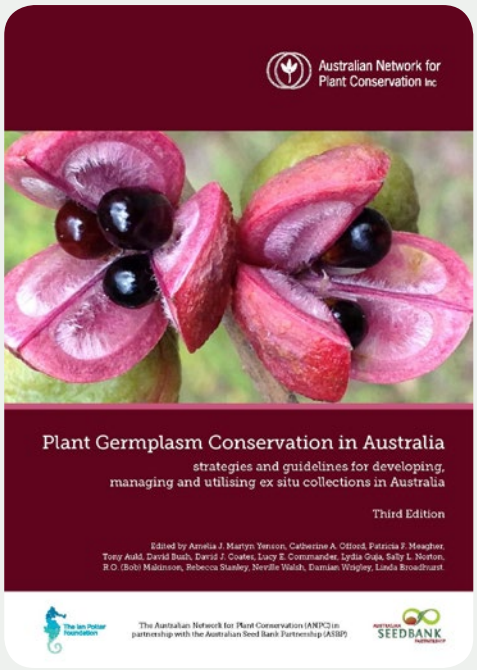
The Guidelines provide a science-based best practice guide for the ideal management of *ex situ* collections of seeds, plant tissues or whole plants. The Guidelines address the spectrum of activities from plant material collection through to storage and a diverse range of uses, species recovery, translocating nursery-grown plants or seeds, research, establishing living collections, education, horticultural display, and sustainable plant development. As well as being about a physical product, i.e. growing and conserving the plants used in these situations – the Guidelines address the collection and sharing of data gathered during the various actions listed above. Capturing and sharing our knowledge contributes to our understanding of Australia's unique flora and acknowledges that ex situ conservation processes are always being refined to meet new challenges and threats.

Dr Amelia Martyn Yenson during filming of video content for the Germplasm Guidelines launch (Image: Michael Lawrence-Taylor)

This evidence-based handbook is written as a guide for a range of users, such as conservation agencies, scientists, nursery staff, students, volunteers, and anyone interested in applied plant biology. Project Manager Dr Amelia Martyn Yenson says the guidelines are "a message of hope and action from 78 collaborators across Australasia. We showcase the latest techniques, literature and procedures for optimising germplasm storage and use, along with 50 case studies".

To support the release of the Guidelines, the ANPC is developing video content and will schedule a range of promulgation activities in 2022 to assist our Partners with *ex situ* conservation. In the 2021 –22 financial year, the ANPC will also be working with the Partnership to produce further videos to share knowledge from this project.

This revision of the Guidelines was funded by The Ian Potter Foundation. Completed in 2021, the Guidelines will be launched by Professor Tim Entwisle during the Partnership's Australasian Seed Science Conference in September 2021. By the time this report is published, the Guidelines will be available for free download from the ANPC's website https://www.anpc.asn.au/plant-germplasm/



Cover of the third edition of 'Plant Germplasm Conservation in Australia – strategies and guidelines for developing, managing and utilising *ex situ* collections' (Image: ANPC)

Project Phoenix

Project Phoenix is a key native seed project, delivered by Greening Australia and funded by the Australian Government's Wildlife and Habitat Bushfire Recovery package following the 2019–20 bushfires. It is a strategic program to build and secure native seed and plant supply for landscape restoration, recovery and resilience in bushfire-affected areas and other vulnerable landscapes.

Project Phoenix focused on six priority objectives:

- Understand native seed supply needs to restore vegetation and wildlife habitat in fire impacted regions.
- Build the capacity of the native seed and nursery industry.
- Develop and coordinate a ten-year native seed strategy including engagement with stakeholders
- Update the Florabank resources
- Support conservation seed banks for future safeguarding against local extinctions
- Develop national native seed training opportunities, with particular emphasis on Indigenous and local communities

The project developed an evidence base for the native seed sector in 2021, synthesised from 30 individual seed-focused projects delivered within a sixteen-month period. Collaborating widely from across the sector and beyond to produce the project outcomes, the project teams included one federal department, eight state and territory agencies, two research institutions, six not-for-profits, five consultancies and three small businesses. This list included the NSW Indigenous Chamber of Commerce, which delivered a national project specifically focused on indigenous participation in the native seed sector.

One of the key Project Phoenix activities was, for the first time, the development of a 10-Year-Strategy for the Australian Native Seed Sector. The Strategy proposes a coordinated approach to growing the sector, including actions to support a sustainable supply of high-quality native seed to underpin landscape restoration and biodiversity conservation. The Strategy was developed by an independent organisation, informed by experts, sector workshops and a public consultation where people could make a submission via an online survey or as an open response. A report on the findings from the public consultation was made available to the sector.

The Partnership contributed new germplasm collections to provide insurance for Australia's native species against future loss from environmental crises such as bushfires. Partners also undertook germination trials for new and existing collections to test collection viability and to document species germination protocols. Another key contribution to the project was undertaking rapid flora assessments in the field. This provided conservation agencies with important data on the impact of fires, and on species recovery post-fire, which will inform future bushfire response and management.

Other key outcomes included renewing important restoration resources: the Florabank website, hosting the Florabank Guidelines (done by the ANPC Healthy Seeds team), and the development of Florabank training. This allows the sector to connect and identify network, access and exchange information, and engage in best-practice seed management training, which will recharge restoration efforts in Australia. More information can be found at https://www.greeningaustralia.org.au/project-phoenix-resources/

Selecting the right native seed batches from the seedbank is important in natural area restoration (Image: Nick Wood).

Goal 4: Sharing knowledge and engaging the public, private and charity sectors, as well as community members, in the work of the Australian Seed Bank Partnership

Threatened Species Strategy Year Five Report

The 2015–20 Threatened Species Strategy is the Australian Government's approach to prioritising investment and setting the direction for efforts to recover threatened plants, animals and ecological communities. The Threatened Species Commissioner prepares yearly reports on progress against the targets over the life of the Strategy. The Partnership contributed to the Strategy's final Year Five Report, providing an update on the target of '100 per cent of Australia's known threatened plant species stored in one or more of Australia's conservation seed banks'.

Compiling data from nine partner seed banks, the Partnership reported that 67.7 per cent of Australia's known threatened plant species are stored in conservation seed banks (930 taxa of the 1,373 taxa listed under the EPBC Act). The 100 per cent target was not met, primarily because recent research indicates that not all Australian plants are biologically compatible with storage in traditional conservation seed banks using current methods.

Seed banking will remain a focus in the new 2021–31 Threatened Species Strategy and Action Plan, and the Office of the Threatened Species Commissioner will continue to work closely with the Partnership to ensure Australia's known threatened species are stored in conservation seed banks.

The partnership contributed to year five reporting for the Threatened Species Strategy.

Sharing knowledge with the ANPC

The Australian Network for Plant Conservation Inc. (ANPC) was excited to collaborate with the Australian Seed Bank Partnership to create communication materials for their project 'Banking on Seeds for Bushfire Recovery'. This project was focussed on securing Australia's unique flora from ecosystem threats, particularly in fire affected areas. It aimed to limit the decline of 25 plant species from fire-affected areas across five Australian states and territories. This was achieved through a range of activities: seed collection, propagation, reintroduction, germination trials, and rapid flora assessments. The project also focused on the long-term *ex situ* banking of native seeds and community engagement. Volunteers from the community gained an understanding of the importance of bushfire recovery actions in long-term conservation efforts.

Working together, the ANPC and Partnership created a range of communication materials to support the Partnership's mission to share knowledge. This involved identifying six priority species that required urgent management intervention. With the help of the Partners, the ANPC collated images, data and stories on these six species. These priority species were highlighted in fact sheets, social media posts and two case study articles for publication in the ANPC's bulletin *Australasian Plant Conservation*. The fact sheets provide background information on the plant species and detail the measures the Partnership has undertaken for their conservation. They are published on the Partnership's website and are available for free download.

The ANPC also produced a video slideshow containing images of these six species. This was published on the ANPC's YouTube channel and played during the 2021 Australasian Seed Science Conference. Through a combined effort we created educational materials that are available for everyone to access. This works towards the Partnership's goal to share knowledge and engage the public in their work.

Goal 5: Securing and strategically managing our resources to strengthen and support the work of the Australian Seed Bank Partnership to achieve its vision

Terrestrial collections are too main-stream

As for many of the Partners, work in Victoria during 2020–21 was dominated by bushfire recovery. Additional funding has seen the appointment of a new Seed Scientist, Dr Rebecca Miller, and a higher-than-usual workload saw the recruitment of two technical assistants to help with seed collection and processing (Simon Heyes and Danny White). Field trips involved seed collection, threatened species assessments and, with the help of Horticulture staff from both the Melbourne and Cranbourne Gardens, threatened species propagation. In total, eight trips were undertaken, mainly into eastern Victoria where fires were most extensive. These trips yielded 78 seed collections and

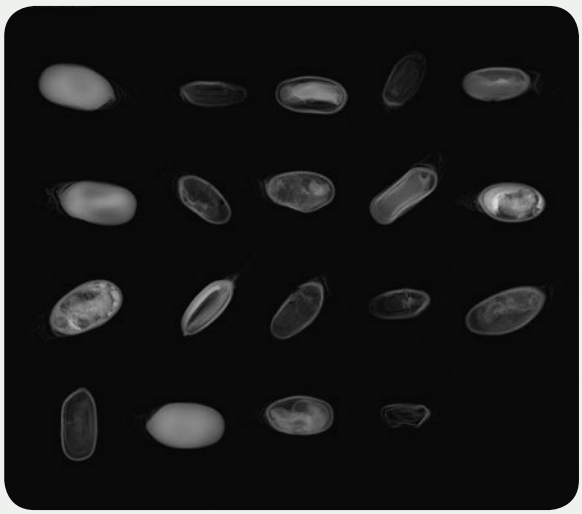
Fact sheets were produced by the ANPC for six of the project's priority species.

approximately 180 propagation collections, some of which will be used for orcharding seed from species that could not be obtained from wild populations. Seed collections covered 72 species, 60 of which are considered rare or threatened at state or federal level in Australia.

Fires burnt some of the most remote and inaccessible parts of eastern Victoria, which required extended trips into these regions. To access parts of the Snowy River Gorge, a six-day rafting trip was undertaken. This trip included Seedbank, Science, Herbarium Curation and Horticulture staff from Royal Botanic Gardens Victoria. From this trip, seed and plant material was collected from several endangered and vulnerable species, such as *Westringia cremnophila*, *Pomaderris brunnea*, *Salvia plebeia*, *Sicyos australis*, *Myoporum floribundum* and *Acacia dawsonii*.

Staff from the Royal Botanic Gardens Victoria rafting on Snowy River (Image: Rebecca Miller).

Along with additional funding for personnel, the Victorian Conservation Seedbank acquired new equipment, including an X-ray machine, thermogradient plate and a desktop low-vacuum scanning electron microscope. This equipment has vastly increased our capacity to process seed, capture reference images and undertake key research. X-raying is now a standard part of our curation process for all new seed collections to ensure high quality collections are banked for conservation. The thermogradient plate allows us to test the germination response across a temperature gradient, incorporating day/night length to characterise a species' thermal tolerance and germination limits, thereby helping to characterise optimal germination conditions in the laboratory, and translate potential risks to germination and plant recruitment *in situ*, as a result of changing climates. The benchtop scanning electron microscope enables detailed morphometric analyses of seeds and other plant structures that can be used for a wide range of research and conservation activities.



X-ray image of *Acacia ureniae* seed (Image: Danny White).

Boosting the Partnership's online presence

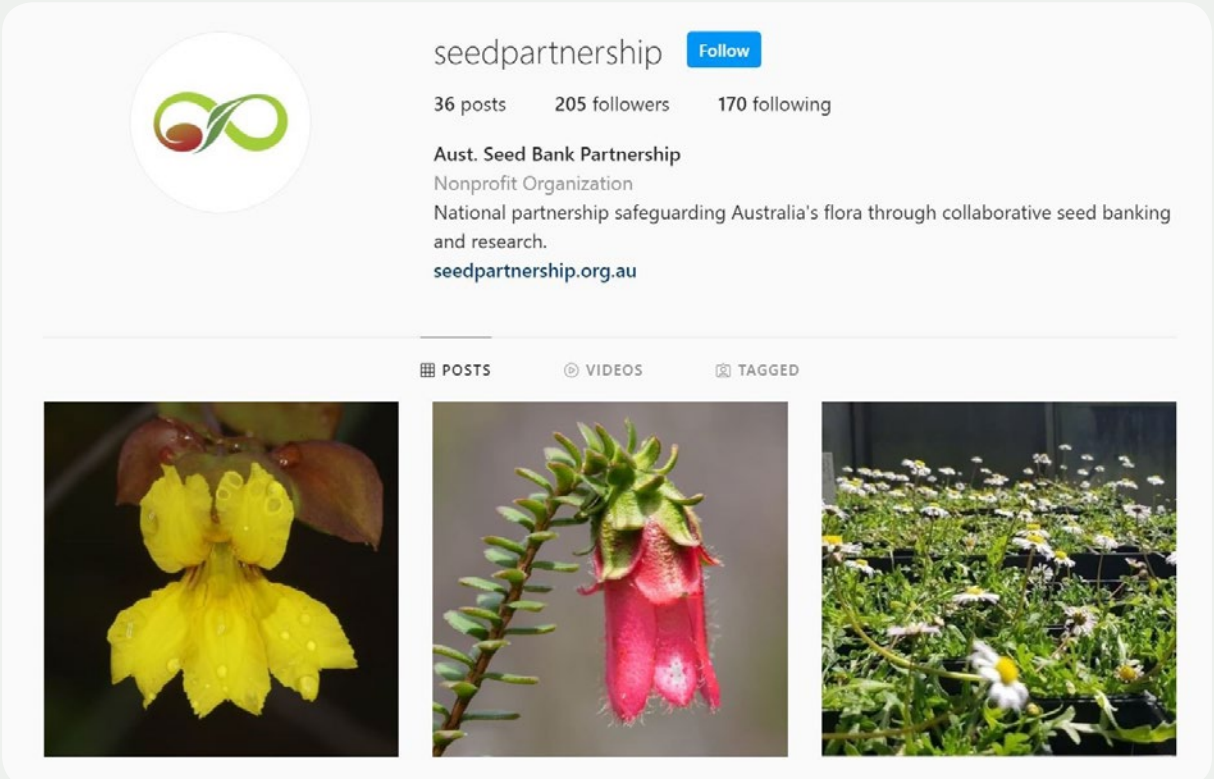
The Partnership's mission is a national effort to conserve Australia's native plant diversity through collaborative and sustainable seed collecting, banking, research and knowledge sharing. Communicating effectively is key to achieving this by improving stakeholder awareness, maintaining crucial networks, sharing tools and knowledge, and encouraging further investment and support.

With a varied audience for our work, the Partnership utilises various print and digital platforms for stakeholder communication. The main online avenues for reaching our audiences include social media and the Partnership's website. Some key metrics for the 2020–21 financial year were:

- 2.9K Facebook followers, with a yearly reach of 14,243 (number of people who saw posts)
- 599 Twitter followers with 77K impressions over the year (number of times users saw a tweet)
- 201 Instagram followers with a reach of 5,599 people throughout the year (our first year on Instagram)
- the launch of eight new initiative pages on the Partnerships website, and a total of 13,895 page views for the entire site.

This investment to boost our online profile was a key factor in attracting a number of private donations, invitations to apply for grants, and involvements in sponsored industry 'activations' such as the Australian Tourism Exchange in June 2021. We gratefully acknowledge all Partners and Associates who contributed to providing content for these platforms.

With support from CHABG, in 2022 the Partnership plans to advance communication further by developing additional website pages, improving the accessibility of our website, and exploring Google Ad Grants to improve reach and boost support for seed science and conservation.



The Partnership established an Instagram account this year to visually showcase our work and improve stakeholder awareness.

FUTURE DIRECTIONS

The Australian Seed Bank Partnership is working towards a future where Australia's native plant diversity is valued, understood and conserved for the benefit of all. To achieve this vision, we will focus on the following activities in 2021–22.

Bushfire Projects

We will be continuing our bushfire recovery projects around the country, collecting and germinating seed from a diversity of species. We will also be collecting data on the impact of bushfire at the species level using the Rapid Flora Methodology adopted across the Partnership after having been developed and refined by the team at the Australian PlantBank in NSW following consultation with the Partners.

Some plant species respond quickly after a fire event, and in the first year post fire the Partners capitalised on these collecting opportunities where COVID-19 travel restrictions allowed them to. In years two and beyond, the recovery of other species will shift to those species that take longer to recover before setting seed in sufficient quantities for our collectors to sample.

As we continue to focus our efforts on bushfire recovery, we are mindful of the many other threats facing Australia's native species, including pests and disease like *Austropuccinia psidii* (Myrtle rust) and the widespread impacts of climate change. We are mindful that achieving better outcomes for our flora required a concerted effort by many organisations and individuals, and we look forward to working with our Associate organisations and the many First Nations Peoples, NGOs, governments, communities, individuals and volunteers who support us to deliver our work.

Four collections of the endangered *Sphenotoma drummondii* were secured from Pyungorup peak in the Stirling Ranges.

Australian Seed Bank Online upgrade

In recent Annual Reports we have indicated our intention to secure additional resources to upgrade the Australian Seed Bank Online. The Partnership is very pleased to announce that the Director of National Parks and the Council of Heads of Australian Botanic Gardens are supporting the Partnership to undertake this important piece of work in 2021–22. We thank them for their support of *ex situ* seed conservation and the data it creates.

New growth in mixed Eucalyptus woodland after bushfires in Fingal Tier, Tasmania (Image James Wood).

This year, staff from the Victorian Conservation Seedbank hunted *Westringia cremnophila* on cliffs in the Snowy River Gorge (Image: Rebecca Miller).

In the coming year, the Partnership will work closely with the Atlas of Living Australia to improve the upload and display of seed and germination data, including updates to site functionality for those wanting to interrogate our data. These improvements will support seed scientists, researchers, students and government agencies to access and use a national dataset of ex situ seed data, enabling us to answer critical questions for plant conservation and to prioritise future seed-collecting efforts.

Australasian Seed Science Conference 2021

As we reported last year, the Australasian Seed Science Conference 2020 was postponed due to the impacts of COVID-19. We are pleased to report that the conference is locked in for 6–10 September 2021 as a fully virtual online event. We welcome delegates from all over the world to join us, particularly those that may not otherwise be able to afford to attend in person.

The conference will welcome seven keynotes and more than 60 papers from seed scientists with diverse backgrounds in the four conference subthemes:

1. *Seed biology and evolutionary ecology* – Unlocking the challenges of germination, dormancy and seed ecology in a changing world.
2. *Seed sourcing and end-use* – Considering genetic diversity, restoration and translocations as well as sector-specific approaches to seed conservation and use.
3. *Seed and gene bank management* – The ins and outs of managing ex situ seed banks and gene banks and the methods for maximising seed quality and longevity.
4. *Seeds in culture and society* – Sharing stories and learning about historical, socio-cultural and legal practices of seed conservation, use, exchange and repatriation, including collaborations between traditional use, community, and ex situ seed banks and gene banks.

With a move to an online format, field trips will no longer be included in the program, but the three originally planned workshops from 2020 will still be delivered virtually to delegates. Due to the delay in hosting the meeting, the launch of the Florabank Guidelines will no longer be included. However, we congratulate the Australian Network for Plant Conservation (ANPC) on their launch of the guidelines by the Threatened Species Commissioner this year. Despite losing the Florabank Guidelines from the conference program, we are thrilled to be able to host the launch of the 3rd edition of the Plant Germplasm Conservation in Australia guidelines, a project the Partnership has been working with the ANPC to deliver since 2020.

We look forward to reporting on the outcomes of the conference in next year's annual report.

Delegates can access the conference program, keynote speaker profiles, and register to attend at seedscience2021.com.au

HOW YOU CAN HELP

Anyone in Australia or around the world can help us in our mission to conserve Australia's native plant diversity. Financial and volunteer support helps us to improve our approaches to collecting seed and delivering research that enables seed scientists to break complex physical or chemical dormancy, and to establish germination protocols for growing plants for restoration. Further efforts help us to understand how to store the seeds we collect, knowing that we can one day withdraw them from the bank and use them for future projects.

Seed banking our native flora is a highly technical endeavour. Our collectors and seed scientists work collaboratively with many individuals and organisations to deliver better outcomes for plants around the country. Doing so across an entire continent can be costly and time consuming. Securing a small conservation collection of seeds can take weeks or even months of dedicated preparation, field work, processing and laboratory trials, relying on many different people to contribute their knowledge and expertise.

Our work derives great benefit from the invaluable time and skills of the volunteers who join us in the field and in seed banks to secure and process the seeds we collect. Their contributions ensure our seed scientists focus more of their time on solving some of the more complex challenges with seed dormancy and germination, thereby ensuring more of our collections can be used in future translocations, restorations or research.

A great source of support is the funding our Partner institutions receive from government, philanthropy and environmental grants which enable them to maintain their world-class facilities and to undertake both conservation collecting and the fascinating research into the biology and ecology of Australia's native plant species.

Botanic Gardens networks globally have supported plant conservation outcomes through seed banks and living collections for many years, and our work is proving critical in the response to major destructive events like the 2019–20 Australian bushfires or the increasing impact of Myrtle rust. These organisations have built the capability to contribute to local, regional and national efforts to conserve our threatened species, and we do this largely through our networks and collaborations. These efforts and collaborations take time and resources, and we are seeking your help to support us in these endeavours.

With your help, we can continue to grow our national effort to conserve Australia's native plant diversity by collaborative and sustainable seed collecting, banking and research, and by sharing our knowledge about Australian plants across the equally diverse plant conservation community. With your help, we can make a difference.

Your donations will make a difference

Donations to individual gardens are having a big impact on the development and delivery of individual seed conservation programs. Donating to the Australian Seed Bank Partnership will build on this support and help to underpin a national collaborative effort that can deliver strategic continent-wide outcomes. The work of seed banks relies on world class scientific analysis and research to ensure the strategies, protocols and methods we use have the best probability of delivering effective and efficient *ex situ* seed storage and utilisation of our collections.

Collecting and banking native seed is an incredibly rewarding experience. However, a lot of work goes into ensuring we're banking the right seeds in the best possible conditions. Our collectors devote significant time to identify target species and to plan collecting trips that coincide with seed-set across a diversity of species. They also spend several weeks a year in the field making collections. In addition to the time in the field, many weeks are dedicated to cleaning, drying and cataloguing seeds and herbarium specimens. Germination trials are also conducted for every species we collect, to ensure seeds are actually viable and therefore worth storing in the bank.

Jenny Guerin (South Australian Seed Conservation Centre) assessing *Hibbertia glebosa* ssp *oblonga* after fires on Snug Cove Road, Kangaroo Island (Image: Dan Duval).

Every cent of your donation will support the work of the Partnership. Our governing body, The Council of Heads of Australian Botanic Gardens, has established a Public Fund Committee to oversee the management of donations received by the Partnership. The Public Fund Committee is responsible for ensuring the donations we receive are used to help conserve Australia's native flora through seed collecting, storage and germination, and utilising our collections for conservation, research and restoration.

To date, Myrtle rust has not been detected in Western Australia. With the potential to devastate jarrah, karri, tuart and wandoo forests, pre-emptive work to secure susceptible species such as *Verticordia plumosa* var *vassensis* (pictured) is of a high priority (Image: Andrew Crawford).

Donating to the Australian Seed Bank Partnership is simple. Our website supports secure payments through PayPal, providing the option for one-off or recurring donations to support our work. A PayPal account is not required as donations can be made securely using a debit or credit card. Visit our website to see how easy it is to support Australia's largest network of *ex situ* conservation seed banks – https://www.seedpartnership.org.au/make-a-difference/

The Partnership welcomes donations of any size and can work with you to design a package that suits the areas of our work that you would like to support. Donations of $2 or more are tax-deductible.

To discuss your donation in more detail we invite you to contact the National Coordinator on +61 (0) 2 6250 9473 or via email at coordinator@seedpartnership.org.au.

ANNUAL FINANCIAL REPORT for the year ending 30 June 2021

The Australian Seed Bank Partnership is a trading name of The Council of Heads of Australian Botanic Gardens Incorporated (CHABG), as well as the primary conservation program for the organisation. CHABG is an association incorporated under the Australian Capital Territory *Associations Incorporation Act 1991*, an Act administered by the Office of Regulatory Services in the ACT. CHABG, a charitable institution endorsed by the Australian Taxation Office, is also endorsed as a recipient of deductible gifts under Subdivision 30-BA of the Income Tax Assessment Act 1997 for the operation of the 'Council of Heads of Australian Botanic Gardens Public Fund'.

The financial report contained within this annual report also includes financial statements for CHABG's other program activities.

The Council of Heads of Australian Botanic Gardens Incorporated

Financial Statements

For the Year Ended 30 June 2021

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For the Year Ended 30 June 2021

The Council of Heads of Australian Botanic Gardens Incorporated

Committee's Report

For the Year ended 30 June 2021

The committee members submit the financial report of the Association for the financial year ended 30 June 2021.

Committee members

The names of committee members throughout the year and at the date of this report are:

Prof. Tim Entwisle
Mr Dale Arvidsson
Mr Alan Barrett
Mr Gary Davies
Mr Bryan Harty
Ms Denise Ora
Dr Lucy Sutherland
Dr Judy West

Principal activities

The Council of Heads of Australian Botanic Gardens and the Australian Seed Bank Partnership have continued to respond to the impacts of the 2019-2020 bushfires and the wetter weather caused by La Niña. In doing so, we have contributed data, information and expertise to governments at the local, state and national levels, including using this information to assist in prioritising seed and germplasm collection throughout Australia. Our continuing long-term collaborations with Botanic Gardens and funders nationally and overseas has meant the Partnership has been successful in securing additional grant funding to continue supporting ex situ seed conservation, germination research, rapid flora assessments and the reintroduction of seedlings in situ.

Significant changes

No significant change in the nature of these activities occurred during the year.

Impacts of coronavirus (COVID-19) and extreme weather events

The combination of La Niña and COVID 19 has had a significant impact on the operations and outputs of seed banks throughout Australia. Due to these unforeseen impacts, the January to June period of 2021 was dedicated to responding to COVID 19 and planning for the coming collecting seasons in 2020-2021 and 2021-2022. As restrictions on travel are lifted and as the areas within the fire scars recover, the Partners will continue their collecting programs across the country.

Operating result

The Profit of the Association for the financial year amounted to $6,563

Signed in accordance with a resolution of the Members of the Committee:

Chair:

Treasurer:

Dated 16 May 2022

Statement of Comprehensive Income

For the Year Ended 30 June 2021

	Note	2021 $	2020 $
INCOME			
Bank Interest		123	258
CHABG Members Contribution		13,000	10,000
Donations – ASBP		2,267	155
Image Fees		-	6,700
TOTAL INCOME		**15,390**	**17,113**
EXPENDITURE			
Accounting and Bookkeeping Fees		929	273
Advertising and Marketing		940	519
Contribution to Partners (for conference)		-	6,700
Bank Fees		-	32
PayPal Fees		-	28
Annual Report Costs		1,500	1,091
Internet		3,522	899
Association Insurance		1,936	1,873
TOTAL EXPENDITURE		**8,827**	**11,415**

Current year Profit (Loss)/ before income tax		6,563	5,698
Income tax expense		-	-
Net current year Profit (Loss) after income tax		6,563	5,698
RETAINED SURPLUS AT THE BEGINNING OF THE FINANCIAL YEAR		**202,469**	**246,670**
PRIOR PERIOD ADJUSTMENT		**(26,911)**	**(49,899)**
RETAINED SURPLUS AT THE END OF THE FINANCIAL YEAR		**182,121**	**202,469**

Statement of Financial Position

As at 30 June 2021

	Note	2021 $	2020 $
ASSETS			
CURRENT ASSETS			
Cash and cash equivalents		791,107	292,202
Prepayments		8,206	41,289
Trade Debtors		143,000	-
TOTAL CURRENT ASSETS		**942,313**	**333,491**
TOTAL ASSETS		**942,313**	**333,491**
LIABILITIES			
CURRENT LIABILITIES			
GST Payable		28,729	7,338
Sundry Creditors and Accruals		3,950	3,950
Project Funds Received in Advance		727,513	119,734
TOTAL CURRENT LIABILITIES		**760,192**	**131,022**
TOTAL LIABILITIES		**760,192**	**131,022**
NET ASSETS		**182,121**	**202,469**
MEMBERS' FUNDS			
Retained Surplus		**182,121**	**202,469**
TOTAL MEMBERS FUNDS		**182,121**	**202,469**

The Council of Heads of Australian Botanic Gardens Incorporated

Notes to the financial statements
For the Year Ended 30 June 2021

1 Statement of Significant Accounting Policies

This financial report is a special purpose financial report that has been prepared in order to satisfy the financial reporting requirements of the Associations Incorporations Act 1991 (ACT) and the Australian Charities and Not-for- profits Commission Act 2012. The committee has determined that the Association is not a reporting entity.
The financial report has been prepared on an accruals basis and is based on historic costs and does not take into account changing money values or, except where specifically stated, current valuations of non-current assets.
The following material accounting policies, which are consistent with the previous period unless otherwise stated, have been adopted in the preparation of this financial report.

(a) Income Tax

The Association is exempt from income tax under Division 50 of the income Tax Assessment Act 1997.

(b) Property Plant and Equipment (PPE)

Leasehold improvements and office equipment are carried at cost less, where applicable, any accumulated depreciation.

The Depreciable amount of all PPE is depreciated over the useful lives of the assets to the association commencing from the time the asset is held ready for use.

Leasehold improvements are amortised over the shorter of either the unexpired period of the lease or the estimated useful lives of the improvements.

(c) Impairment of Assets

At the end of each reporting period, the committee reviews the carrying amounts of its tangible and intangible assets to determine whether there is any indication that those assets have been impaired. If such an indication exists, an impairment test is carried out on the asset by comparing the recoverable amount of the asset, being the higher of the asset's fair value less costs to sell and value in use, to the asset's carrying amount. Any excess of the assets carrying amount over its recoverable amount is recognised in the income and expenditure statement.

(d) Employee Benefits

Provision is made for the association's liability for employee benefits arising from services rendered by employees to the end of the reporting period. Employee benefits have been measured at the amounts expected to be paid when the liability is settled.

(e) Provisions

Provisions are recognised when the association has a legal or constructive obligation, as a result of past events, for which it is probable that an outflow of economic benefits will result and that outflow can be reasonably measured. Provisions are measured at the best estimate of the amounts required to settle the obligation at the end of the reporting period.

The Council of Heads of Australian Botanic Gardens Incorporated

Notes to the financial statements
For the Year Ended 30 June 2021

(f) Cash and Cash Equivalents

Cash and cash equivalents include cash on hand, deposits held at call with banks, and other short-term highly liquid investments with original maturities of three months or less.

(g) Revenue and Other Income

Revenue is measured at the fair value of the consideration received after taking into account any trade discounts and volume rebates allowed. For this purpose, deferred consideration is not discounted to present values when recognising revenue.

It is not practicable to establish accounting controls over cash receipts from all sources beyond the recording of amounts entered in the books and records. Therefore income is only taken up when received and entered in the books and records

Interest revenue is recognised using the effective interest rate method, which for floating rate financial assets is the rate inherent in the instrument. Dividend revenue is recognised when the right to receive a dividend has been established.

Grant income is recognised as revenue in the year to which the associated expenditure relates. Accordingly, grants received in the current year for expenditure in future years are treated as grants in advance. Unexpended specific grant income at 30 June each year is carried forward to be matched against future income in accordance with Australian Accounting Standards.
All revenue is stated net of the amount of goods and services tax (GST).

(h) Goods and Services Tax (GST)

Revenues, expenses and assets are recognised net of the amount of GST, except where the amount of GST incurred is not recoverable from the Australia Taxation Office. In these circumstances the GST is recognised as part of the cost of acquisition of the asset or as part of an item of the expense. Receivables and payables in the Balance Sheet are shown inclusive of GST.

(i) Accounts Receivable and Other Debtors

Accounts receivable and other debtors include amounts due from members as well as amounts receivable from donors. Receivables expected to be collected within 12 months of the end of the reporting period are classified as current assets. All other receivables are classified as non-current assets.

(j) Trade and Other Payables

Trade and other payables represent the liability outstanding at the end of the reporting period for goods and services received by the association during the reporting period, which remain unpaid. The balance is recognised as a current liability with the amounts normally paid within 30 days of recognition of the liability.

The Council of Heads of Australian Botanic Gardens Incorporated

Notes to the financial statements

For the Year Ended 30 June 2021

Note 2

Events After the Reporting Period

The Committee is not aware of any significant events since the end of the reporting period with the exception of the possible effect of the Novel Coronavirus (COVID-19) pandemic and bushfires and the related impact on the Association's future results of operations, cash flows and financial condition which cannot be reasonably estimated at this stage.

The Council of Heads of Australian Botanic Gardens Incorporated

Statement by Members of the Committee

The committee has determined that the Association is not a reporting entity and that this special purpose financial report should be prepared in accordance with the accounting policies outlined in Note 1 to the financial statements.

In the opinion of the committee of the Association-

1. The financial report, including notes are in accordance with the *Associations Incorporation (ACT) 1991*, and the *Australian Charities and Not-for profits Commission Act 2012*, and
   a) Comply with the Accounting Standards as detailed in Note 1 to the financial statements; and
   b) Give a true and fair view of the Associations financial position as at 30 June 2021 and of its performance for the year ended on that date.

2. In the Committees' opinion there are reasonable grounds to believe that the Association will be able to pay its debts as and when they become due and payable.

This declaration is made in accordance with a resolution of the Committee.

Chair

Treasurer .

Dated this day 16 May **2022**

Canberra ACT

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Bandle
McAneney
& Co.

Chartered Accountants

Suite 2d, 1st Floor
18 Napier Close
DEAKIN ACT 2600
PO Box 52, DEAKIN WEST ACT 2600
AUSTRALIA

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Fax: (02) 6282 3342
Email: banmce@interline.com.au
ABN: 87 955 412 345

THE COUNCIL OF HEADS OF AUSTRALIAN BOTANIC GARDENS INCORPORATED

YEAR ENDED 30 June 2021

AUDITOR'S INDEPENDENCE DECLARATION

As auditor of the financial report of The Council of Heads of Australian Botanic Gardens Incorporated for the year ended 30 June 2021, I declare that, to the best of my knowledge and belief that there have been no contraventions of:

I. The auditor independence requirements of the *Australian Charities and Not-for-profits Commission act 2012* in relation to the audit; and

II. Any applicable code of professional conduct in relation to the audit.

Bandle McAneney & Co

Anthony J Bandle FCA
Partner

Place: Canberra

Date: 16th May **2022**

Liability limited by a scheme approved under Professional Standards Legislation

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Bandle McAneney & Co.

Chartered Accountants

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ABN: 87 955 412 345

Independent Audit Report to the members of The Council of Heads of Australian Botanic Gardens Incorporated

Opinion

We have audited the financial report of The Council of Heads of Australian Botanic Gardens Incorporated ("the Entity") which comprises the Statement of Financial Position as at 30 June 2021, the Statement of Comprehensive Income for the year ended on that date, a summary of significant accounting policies, other explanatory notes and the Committees' Report.

In our opinion, the accompanying financial report of the Association is in accordance with Division 60 of the *Australian Charities and Not-for-profits Act 2012*, including:

a) giving a true and fair view of the Association's financial position as at 30 June 2021 and of its financial performance for the year then ended; and
b) complying with Australian Accounting Standards and Division 60 of the *Australian Charities and Not-for-profits Commission Regulation 2013.*

Basis for Opinion

We conducted our audit in accordance with Australian Auditing Standards. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Report* section of our report. We are independent of the Entity in accordance with the auditor independence requirements of the Accounting Professional and Ethical Standards Board's APES 110 *Code of Ethics for Professional Accountants* ("the Code") that are relevant to our audit of the financial report in Australia. We have also fulfilled our other ethical responsibilities in accordance with the Code.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Emphasis of Matter – Basis of Accounting

We draw attention to Note 1 to the financial report which describes the basis of accounting. The financial report has been prepared to assist the Entity meet the requirements of Note 1. As a result, the financial report may not be suitable for another purpose. Our opinion is not modified in respect of this matter.

Committee's Responsibilities for the Financial Report.

The Committee is responsible for the preparation and fair presentation of the special purpose financial report in accordance with the accounting policies described in Note 1 of the financial statements and for such internal control as the Committee determines is necessary to enable the preparation of the financial report that is free from material misstatement, whether due to fraud or error.

In preparing the special purpose financial report, the Committee is responsible for assessing the Entity's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Committee either intend to liquidate the Entity or to cease operations, or have no realistic alternative but to do so.

Auditor's Responsibilities for the Audit of the Financial Report

Our objectives are to obtain reasonable assurance about whether the financial report as a whole is free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Australian Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of this financial report.

As part of an audit in accordance with the Australian Auditing Standards, we exercise professional judgement and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the management.
- Conclude on the appropriateness of the management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial report or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Entity to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial report, including the disclosures, and whether the financial report represents the underlying transactions and events in a manner that achieves fair presentation.

We communicate with the Committee regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identity during our audit.

Bandle McAneney & Co

Anthony J Bandle FCA
Partner

Canberra:

Dated this 16th May **2022**

Liability limited by a scheme approved under Professional Standards Legislation

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GOVERNANCE OF THE AUSTRALIAN SEED BANK PARTNERSHIP

The Management Committee of The Council of Heads of Australian Botanic Gardens Incorporated (CHABG Inc.) draws on the expertise of senior executives from Australia's capital city botanic gardens, who guide the strategic direction of the Partnership's work to ensure it addresses national plant conservation priorities and contributes to international conservation targets.

Members of the Management Committee of the Council in 2020–21 were:

Mr Dale Arvidsson – Curator, Brisbane Botanic Gardens (CHABG Chair)

Mr Alan Barrett – Chief Executive Officer, Botanic Gardens and Parks Authority (Kings Park) (CHABG Secretary)

Mr Gary Davies – Director, Royal Tasmanian Botanical Gardens

Prof Tim Entwisle – Director and Chief Executive, Royal Botanic Gardens Victoria

Mr Bryan Harty – Director, George Brown Darwin Botanic Gardens

Dr Lucy A Sutherland – Director, Botanic Gardens and State Herbarium, South Australia

Ms Denise Ora – Chief Executive, Royal Botanic Gardens and Domain Trust, Sydney

Dr Judy West – Executive Director, Australian National Botanic Gardens.

Other Position holders:

Mr Peter Byron – General Manager, Australian National Botanic Gardens, Canberra (CHABG Public Officer)

Dr Brett Summerell – Director Research & Chief Botanist, Royal Botanic Gardens and Domain Trust (CHABG Treasurer)


Dale Arvidsson


Alan Barrett


Gary Davies


Tim Entwisle


Bryan Harty


Lucy Sutherland


Denise Ora


Judy West


Peter Byron


Brett Summerell

The Australian Seed Bank Partnership grew out of the Australian Conservation and Research Network (AusCAR) with support from the Royal Botanic Gardens, Kew's Millennium Seed Bank Project. The MSBP supported Australian institutions to achieve the Project's goal of banking 10 per cent of the world's plant species by 2010 and we have continued to support the MSBP to bank 25 per cent of the world's flora by 2020. Since the Australian bushfires of 2019–20, the Partnership has worked closely with the MSBP to deliver emergency post-bushfire seed collecting with support from the UK Government and philanthropic funders.

The Partnership program is carried out in collaboration with our Partner organisations who commit significant resources to the ongoing management of seed banks and maintenance of plant germplasm collections. Other organisations (our Associates) assist with individual projects that contribute to the overall program. The program is managed by a National Steering Committee and led by the National Coordinator.

The Australian Seed Bank Partnership is supported by financial and in-kind contributions (e.g. scientific expertise, project management, fieldwork, information management, promotion and marketing) from partner and associate organisations, through philanthropic and public donations and the generous time commitment from many dedicated volunteers. Our business plan outlines our national program, which includes specific strategies, actions and timelines for achieving our vision: https://www.seedpartnership.org.au/about-us/strategies-and-reports/.

Utilising funding provided by WWF, Botanica by Airwick, and Woolworths, staff at the South Australian Seed Conservation Centre propagated the Corunna Daisy (*Brachyscome muelleri*) in *ex situ* Seed Production Areas at the Adelaide Botanic Gardens, then translocated 250 plants to Secret Rocks Nature Reserve (Images: Jenny Guerin)

National Coordinator Australian Seed Bank Partnership

Mr Damian Wrigley

The role of the National Coordinator is to provide strategic leadership and program management to oversee the implementation of the Partnership's business plan, policy and operations. The Coordinator works with the members of the Partnership to secure the necessary funds for operations and programs that will realise the business plan for the Partnership. This position is supported by the Director of National Parks and is hosted at the Australian National Botanic Gardens.

Utricularia lateriflora is a small to medium-sized perennial carnivorous plant with a pale lilac or violet corolla. It can be found in Queensland, NSW, Victoria, South Australia and Tasmania. These tiny seeds were photographed using a microscope following a long journey from Kangaroo Island to the South Australian Seed Conservation Centre as part of the summer collecting in 2020–21.

National Steering Committee

The National Steering Committee brings together a team of leading experts from the members of the Partnership, who help guide the delivery or practical plant conservation outcomes. These experts range from seed scientists, botanists, taxonomists and ecologists to horticulturalists and plant conservation ambassadors.

Members of the National Steering Committee during 2020–21 were:

Dr Aisyah Faruk – Oceania Coordinator, Millennium Seed Bank Partnership, Royal Botanic Gardens, Kew, UK

Ms Samantha Craigie – Senior Ecologist, Greening Australia

Dr Andrew Crawford – Committee Member, Australian Network for Plant Conservation; Seed Bank Manager, Western Australian Seed Centre, Kensington, Department of Biodiversity, Conservation and Attractions, Western Australia

Peter Cuneo – Manager, Seedbank and Restoration Research, PlantBank, Royal Botanic Gardens and Domain Trust, New South Wales

Mr Ross Demuth – Botanic and Technical Coordinator, Brisbane Botanic Gardens, Mt Coot-tha, Queensland

Mr Bradley Desmond – Assistant Coordinator, Australian Seed Bank Partnership

Mr Dan Duval – Seed Research Officer, South Australian Seed Conservation Centre, Botanic Gardens and State Herbarium, South Australia

Dr Jenny Guerin – Seed Research Officer, South Australian Seed Conservation Centre, Botanic Gardens and State Herbarium, South Australia

Dr David Merritt – Principal Research Scientist, Kings Park Science, Department of Biodiversity, Conservation and Attractions, Western Australia

Dr Andre Messina – Botanist, Royal Botanic Gardens Victoria, Victoria

As part of the Partnership's Rare Bloom Project, Kings Park researchers germinated the endangered Bussell's spider orchid (*Caladenia busselliana*) in agar plates, and are growing them in the lab with their fungal symbiont (Images: Belinda Davis)

Mr Tom North – Seed Bank Curator, Australian National Botanic Gardens, Australian Capital Territory

Mr Scott Pullyblank – Curator Life Sciences, Alice Springs Desert Park

Mr Neville Walsh – Senior Conservation Botanist, Royal Botanic Gardens Victoria, Victoria

Mr Ben Wirf – Nursery / Seedbank Manager, George Brown Darwin Botanic Gardens, Northern Territory

Mr James Wood – Seed Bank Manager, Royal Tasmanian Botanical Gardens, Tasmania.

THANK YOU – SUPPORTERS AND ASSOCIATES

The Australian Seed Bank Partnership would like to thank all our supporters and Associates. Your resources and in-kind support have made significant contributions to our mission to conserve Australia's native plant diversity over many years.

As the decade draws to a close, we look forward to working with our supporters and Associates and to continuing these collaborations well into the future. The combined efforts of the Partnership staff, volunteers and supporters is paramount to seeing us achieve our vision of a future where Australia's native plant diversity is valued, understood and conserved for the benefit of all.

Supporters

- Belle Laide Events
- Australian Government Department of Agriculture, Water and the Environment
- Director of National Parks
- UK Government
- Millennium Seed Bank Partnership, Royal Botanic Gardens, Kew
- Greening Australia
- Garfield Weston Foundation
- Woolworths
- World Wide Fund for Nature

Associates

- Atlas of Living Australia
- Australian Government Department of Agriculture, Water and the Environment
- Australian Grains Genebank
- Botanic Gardens of Australia and New Zealand Inc.
- Centre for Australian National Biodiversity Research
- CSIRO
- Global Crop Diversity Trust
- Grains Research and Development Corporation
- The Queensland Herbarium, Department of Environment and Science, Queensland
- Society for Ecological Restoration Australasia
- University of New England.

Volunteers, Graduates and Interns

- Anna Moreing
- Ella Bessen
- Christine Fernance

Seeds of *Trachymene composita* var. *composita* were collected by the Victorian Conservation Seedbank as part of the Partnership's Garfield Weston Project (Image: Daniel White)

PARTNER ORGANISATIONS OF THE AUSTRALIAN SEED BANK PARTNERSHIP

Alice Springs Desert Park Parks and Wildlife commission of the Northern Territory (ASDP)

Australian Network for Plant Conservation Inc. (ANPC)

Australian PlantBank The Royal Botanic Gardens and Domain Trust (RBGDT)

Brisbane Botanic Gardens Conservation Seed Bank Brisbane City Council (BBG)

George Brown Darwin Botanic Gardens Parks and Wildlife Commission of the Northern Territory (GBDBG)

Greening Australia (GA)

Millennium Seed Bank Partnership Royal Botanic Gardens, Kew (RBG Kew)

National Seed Bank Australian National Botanic Gardens, Parks Australia (ANBG)

South Australian Seed Conservation Centre Botanic Gardens and State Herbarium, South Australia (BGSH)

Tasmanian Seed Conservation Centre Royal Tasmanian Botanical Gardens (RTBG)

The Victorian Conservation Seedbank Royal Botanic Gardens Victoria (RBGV)

The Western Australian Seed Centre Kings Park, Botanic Gardens and Parks Authority (BGPA)

The Western Australian Seed Centre Kensington, Department of Biodiversity, Conservation and Attractions, Western Australia (DBCA)

Scaevola macrophylla is a Critically Endangered WA species that was last seen in 1990. Two plants were discovered by the WA Seed Centre, Kensington following a fire in the Cape Riche area in 2020. The presence of mature fruit on one of the plants allowed for a small crucial seed collection to be made under our Garfield Weston Project (Image: Andrew Crawford).

Australian Seed Bank Partnership
c/o Australian National Botanic Gardens
GPO Box 1777
Canberra ACT 2601
Australia

ABN: 58153442365

Contact: Damian Wrigley
t: +61 (0) 2 6250 9473
e: coordinator@seedpartnership.org.au

www.seedpartnership.org.au/

CHABG Inc. (trading as the Australian Seed Bank Partnership) is dedicated to supporting the protection, conservation and enhancement of Australian plants and their ecosystems. CHABG Inc. relies on support for the Australian Seed Bank Partnership Program and its other programs to achieve its vision of a future where native plant diversity is valued, understood and conserved for the benefit of all. Please help us to conserve Australia's unique flora and plant communities today and for the future. CHABG Inc. is a charitable institution, with deductible-gift recipient status (item 1), and operates the Council of Heads of Australian Botanic Gardens Public Fund.