AUSTRALIAN SEEDBANK PARTNERSHIP

Safeguarding Australia's Flora
through a national network of native plant seed banks

2017-18 ANNUAL REPORT

safeguarding Australia's flora

CONTENTS

Abbreviations

Australian Grains Genebank (AGG)
Australian National Botanic Gardens (ANBG)
Brisbane Botanic Gardens (BBG)
Botanic Gardens and State Herbarium (BGSH)
Botanic Gardens and Parks Authority (BGPA)
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)
The Council of Heads of Australian Botanic Gardens Incorporated (CHABG Inc.)
Threatened Flora Seed Centre (TFSC), Department of Biodiversity Conservation and Attractions (DBCA)

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Cover: *Acacia burrowsiana* is not particularly well known. The species was described in 2007 with only 1000 plants in its largest population found to the north of Mt Magnet in Western Australia. The Partnership often collects seed from taxa where the biology and ecology of the species are poorly understood. These collections provide the opportunity for us to undertake research that can lead to a better understanding of the species and contribute valuable knowledge to on-ground in-situ conservation efforts. (Photo: Andrew Crawford, DBCA)

This page: The inflorescence of *Eucalyptus johnsoniana* or Johnson's Mallee, contain groups of seven flowering bodies that each result in a myriad of brown, pyramid-shaped seed. The species is listed as Vulnerable at the national level and listed as Declared Rare Flora in Western Australia. (Photo: Andrew Crawford, DBCA)

LETTER FROM THE CHAIR

The conservation of plant diversity is a responsibility we all share as members of the botanical community. This objective is articulated clearly in the *Global Strategy for Plant Conservation* (a cross-cutting issue of the Convention on Biological Diversity) as a 'positive, sustainable future where human activities support the diversity of plant life'. Recent discussions at the Global Partnership for Plant Conservation conference in South Africa highlighted the many achievements and challenges inherent in halting the shocking loss of plant diversity worldwide. The implementation of the Strategy is complex, and the networks and partnerships that contribute to it are as diverse as the flora we seek to protect.

Target 8 of the *Global Strategy for Plant Conservation* is to hold 'at least 75 per cent of threatened plant species in ex-situ collections, preferably in the country of origin, and at least 20 per cent available for recovery and restoration programmes'. The Council of Heads of Australian Botanic Gardens, through the Australian Seed Bank Partnership, has identified this target as of the utmost importance to conserving this country's plant diversity. Since 2011, we have prioritised collections of endangered, endemic and economically significant species through Phase 1 of our 1000 Species Project. Our collectors have ventured further afield to collect seed for storing in conservation seed banks throughout Australia. These collections contribute to Australia's national holdings, with approximately 48 per cent of our legislatively listed threatened plant taxa banked—an increase of around 13 per cent since we last reported on threatened species in 2016.

We have strengthened existing partnerships and developed new collaborations to support plant conservation in Australia and throughout our region. In December 2017, we joined the Millennium Seed Bank Partnership and the New Zealand Ministry for Primary Industries in delivering capacity-building training for botanic gardens and Te Tira Whakamātaki (the Māori Biosecurity Network). Workshops in Auckland and Wellington focused on the impacts of Myrtle Rust (*Austropuccinia puccini*), and explored relevant seed conservation techniques for species at risk of infection.

In Australia, new project work has contributed to securing collections of crop wild relative species from Kakadu National Park, incorporating traditional knowledge into seed and data collection. We partnered with the Australian Grains Genebank to provide training to traditional owners and visiting scientists from Indonesia and Papua New Guinea, exchanging valuable knowledge developed over many years. This project will continue next year, with improved collecting and training targets identified in the coming months.

Across the partnership, data management continues to improve. We are working with the Atlas of Living Australia to update the Australian Seed Bank – our free, online knowledge resource with the aim of further supporting the seed conservation community to undertake research and to implement conservation projects throughout the country.

Many have contributed to this work, and some have left us during the year. Dr Anne Cochrane has dedicated many years to the conservation of Western Australia's flora, and Jason Halford made a concerted effort to secure seed from a vast array of Queensland's flora. We wish them both well in their future endeavours, and look forward to their continued influence on plant conservation over the coming years.

In a few months, I finish my term as Chair of the Council of Heads of Australian Botanic Gardens. The Australian Seed Bank Partnership has been our flagship project during my three-year tenure, and I'm delighted that it has thrived and grown during that time. The considerable progress reported here has depended on many seed collectors and other staff associated with each of the seedbanks, as well as on the strong support and leadership provided by my colleagues on the Council. I would like to thank particularly the two Australian Seed Bank Partnership National Coordinators during my time as Chair – Lucy Sutherland and Damian Wrigley. Both have been an absolute pleasure to work with and have played a critical role in our success so far. Thank you all, and may this bank continue to be a credit to our country.

Professor Tim Entwisle
Chair, Council of Heads of Australian Botanic Gardens Inc.

LETTER FROM THE NATIONAL COORDINATOR

Over the past 12 months I have spoken about seeds to a great diversity of people, and what I have found most encouraging is their perceived value of seed banking and the science that underpins our work. From those outside the sector, I have routinely encountered fascination and overwhelming support for seed banking and the dedicated collectors, scientists and volunteers who give their time to bank Australia's native plant diversity. From within the community, I am heartened by the willingness to collaborate and by the many examples of how that helps us achieve better conservation outcomes for Australia's native species.

Seed banking is the cornerstone of conservation efforts for many of Australia's plant taxa, and its application in support of a variety of conservation efforts continues to grow. Our collectors have been tireless in building seed collections from Australia's native flora across every state and territory, as well as from some of Australia's external island territories. This year's fieldwork took our teams to 42 bioregions, and new seed collections from 261 taxa are now safe in the bank and available for research and restoration.

This year has been the last for collecting under the Millennium Seed Bank Partnership-funded Fieldwork Funds Project. This project has supported our Partners to secure collections of new taxa for Australia's ex-situ conservation collections, with 158 taxa collected in this last year of the project.

Our collectors have also banked 92 tree taxa under the Global Trees Seed Bank Project. This four-year project has been a great success; collections of more than 400 taxa are now secured in seed banks throughout the country. We are grateful to the MSB and our Partner institutions for supporting us to undertake a fifth and final year of collecting for the project next year. These collections are an important contribution to global efforts to conserve plant diversity under Target 8 of the Global Strategy for Plant Conservation.

We have engaged in new projects that have helped to secure crop wild relatives from Kakadu National Park in the Northern Territory, and have supported experts from New South Wales and Queensland to visit New Zealand to deliver seed conservation training and share their experiences in responding to the impacts of *Austropuccinia puccinii*. The risks from pests and disease continue to be an issue for Australian flora and we have again contributed to the ongoing discussions on how to respond to the Myrtle Rust threat for Australian native taxa.

Our Partners have worked closely with the Millennium Seed Bank Partnership to develop a comprehensive new program of work - *Plants on the Precipice* - which we hope to see funded very soon. The program encompasses three distinct projects, in which collections will be made in various landscapes, accompanied by targeted research to support seed storage and use in on-ground conservation action.

It is with great pleasure that I announce the next National Seed Science Forum, to be held in early 2020 and hosted by the Australian National Botanic Gardens. The forum will bring together national and international seed scientists to explore recent advances across sectors, and to identify opportunities for collaboration that further supports ex-situ plant conservation. I look forward to working with our Partners and Associates to develop what will surely be an exciting program.

I hope you enjoy this year's Annual Report.

Damian Wrigley
National Coordinator

PROFILES OF OUR PEOPLE

Sally Norton, National Leader, Australian Grains Genebank

Sally Norton collecting crop wild relatives in Kakadu National Park, April 2018. This sandstone escarpment is home to *Cajanus acutifolius*, a wild relative of pigeon pea. (Photo: Sally Norton)

I have been involved in seed conservation for more than 20 years, first working with the Australian Tropical Crops and Forages Germplasm Collection in Biloela in Queensland, continuing into my current position as National Leader for the Australian Grains Genebank in Horsham, Victoria. I have had a keen interest in the plant world for as long as I can remember, and developed a passion for the Australian native wild relatives of agricultural grain crops in my early 20s.

My interest in plants and food production led me to study agriculture before I moved to Queensland to work with the Tropical Genebank in the conservation of grain crop varieties. There I was responsible for a range of grain crops, and was given the challenge of developing regeneration protocols for some wild species related to crops. This led to a PhD, to determine the genetic relationships between cultivated and Australian-native wild sorghum species.

Throughout my time with the Tropical Genebank, I learnt so much about the diversity and conservation of agricultural crops, and developed a passion for our own Australian crop wild relatives, including the challenges to not only grow them, but to conserve them for future generations.

In 2013, I moved to Horsham to lead the newly formed Australian Grains Genebank, a notionally consolidated program for the conservation of agricultural grain crops. In this role I have been responsible for bringing together three state genebank collections into the one program, ensuring their availability to plant researchers and breeders around the world. Throughout this time, I have built a strong relationship with the Australian Seed Bank Partnership, getting to know those working in some of the conservation seedbanks across Australia. In 2018, I had the privilege of working with the Partnership and Kakadu National Park on a project funded through the Millennium Seed Bank Partnership to build capacity and collect crop wild relatives with Kakadu's traditional owners. This trip really reminded me how much of a challenge these species can be, and how much fun one can have working with such a passionate group of people in the field.

I am looking forward to continuing my work and contributing to the conservation and utilisation of a wide diversity of plant species that will provide food security for the world's growing population into the future.

Lenore Morris, Project Officer, Australian Seed Bank Partnership

Lenore Morris in the gardens at the Australian National Botanic Gardens, ACT. (Photo: Damian Wrigley

I am very new to seed banking, with my role at the Australian Seed Bank Partnership being my first real look into flora conservation.

Growing up in the remote East Kimberley I spent a lot of my childhood out on country. This allowed me to gain a love and appreciation for my environment, although it did start with learning what time of year is best for hunting bush turkey! My interest in flora and fauna conservation began in high school when I started studying biology, and continued into university where I majored in environmental science.

Since finishing my studies, my early career has been quite varied. I have worked in the mining industry, tagged turtles on Barrow Island, and even trained Border Force Cadets on the Convention on International Trade in Endangered Species of Wild Fauna and Flora. In 2017, I was lucky enough to be accepted into the Graduate Program of the Department of the Environment and Energy. Through this program, I became familiar with the work of the Australian Seed Bank Partnership.

My role with the Partnership was to review and update the management of our seed collection and germination data. The project focused on updating the data held by the Partnership, including negotiating updates to the Australian Seed Bank Online—our free, online repository of seed-related data, hosted by the *Atlas of Living Australia*. This work will help ensure the Partnership is well placed to contribute to national and international reporting towards implementation of the Global Strategy for Plant Conservation.

During my short time with the Partnership, I have met and worked with passionate and knowledgeable people. I would like to thank the Council of Heads of Australian Botanic Gardens for the opportunity to contribute to securing the future of Australia's native flora.

Caroline Chong, Research Technician, National Seed Bank, Australian National Botanic Gardens

I joined the National Seed Bank at the Australian National Botanic Gardens in 2016 as a research technician to support seed biology research and conservation of Australia's threatened and significant plants. Under the Director of National Parks, our team's seed collection and research activities encompass flora from enormously varied climates, bioregions and evolutionary histories including oceanic islands – Christmas, Pulu Keeling and Norfolk Islands – and Kakadu National Park, Uluru-Kata Tjuta NP and Booderee NP. This diversity presents an array of biological puzzles to solve in terms of plant life histories, of responses to changing environments, and of seed longevity, dormancy and germination strategies.

Caroline in front of a *Banksia integrifolia*, holding a fruit from a nearby *Banksia serrata* and appreciating the diversity of *Banksia* in Coogee, New South Wales. (Photo: Jo Chong, UTS Sydney).

My work aims to identify the priorities for long-term germplasm storage in seed banks and to supply knowledge on threatened species seed biology to progress conservation efforts. My projects include establishing germination protocols for threatened seed and fern species to help restore natural populations and build ex situ conservation collections. I'm working with our diverse stakeholders to conduct field collecting and research on the flora of Christmas Island and Norfolk Island towards the ASBP-MSB 1000 Species and Global Trees Seed Bank projects.

Science to me always begins in the field. It's the observations and wonderment of how plants persist, reproduce and move in often extreme environments. It is also investigating the drivers of that variation that I find to be endlessly compelling. In Australia I have worked on the seed bank ecology of native and invasive plant species in the Murray-Darling Basin and landscape-scale population genetics and evolutionary radiations in monsoon-driven Australian tropical rivers. Internationally I have been fortunate to spend time investigating the processes driving plant biodiversity and identifying research priorities for conservation in South Africa.

I maintain a keen interest in river ecosystems, finding ways to incorporate swimming adventures. I enjoy developing conservation collections as genetic resources for future use, developing research that is analytically robust, and finding solutions for information and data sharing to support Australian native plant conservation, particularly threatened species.

WHO WE ARE

The Australian Seed Bank Partnership is a national collaboration of nine conservation seed banks and two flora-focused organisations. The Partnership bridges the gap between policy-makers, researchers and the conservation and restoration sectors to help safeguard Australia's plant populations and communities.

Seed banking is the principal tool for the safe and efficient storage of wild plant genetic material. A sound understanding of seed harvest, storage and germination is crucial to combating the global decline of plant diversity. Together, these seed collections and the understanding of seed technology underpin our efforts to protect and restore natural ecosystems. 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 nationally cooperative initiatives focus on seed banking, research, knowledge sharing and capacity building. We follow internationally recognised protocols for collecting and storing the seed of Australian native plants. We record environmental data crucial to our role in plant conservation, and make it openly available through the Australian Seed Bank online. Our research is vital in establishing germination protocols and in building the knowledge base that helps practitioners restore plant communities throughout Australia's diverse landscapes. Our Partners have discovered new species, identified previously unknown populations, and rediscovered species previously thought to be extinct. We share our knowledge and skills, collectively manage risk, and develop and use regional expertise to optimise the effective use of our resources.

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.

Ben Wirf's roadside camp during field work at Jasper Gorge in Judbarra / Gregory National Park, Northern Territory. Field work is a major component of what we do to secure seed from Australia's native species. Substantial planning for each trip is important. It ensures our collectors remain self-sufficient for days and often weeks at a time, enabling them to access hard-to-reach areas and secure new collections for transport back to seed banks. (Photo: Ben Wirf, GBDBG)

The South Australian Seed Conservation Centre hosted this year's face-to-face Steering Committee Meeting at the Adelaide Botanic Gardens. During one of the breaks, Jenny Guerin and Dan Duval (pictured) provided tours of the lab and nursery facilities, with discussions focusing on successes and challenges in the South Australian program. The group also explored possible future research collaborations across the Partnership and in conjunction with the Millennium Seed Bank to look at the impact of different storage conditions on the germination rates of seeds accessioned in seed banks throughout Australia and the United Kingdom. (Photos: Damian Wrigley, ASBP)

AUSTRALIAN SEED BANK PARTNERSHIP HIGHLIGHTS FOR 2017–2018

Visit to the Millennium Seed Bank, Wakehurst Place, United Kingdom

In July 2017, following the 6th Global Botanic Gardens Congress in Switzerland, our National Coordinator visited the Millennium Seed Bank at Wakehurst Place. The Millennium Seed Bank is part of the Royal Botanic Gardens, Kew providing global leadership in the fields of seed banking and research. The visit was a valuable opportunity for the Millennium Seed Bank Partnership and the Australian Seed Bank Partnership to continue discussions on prospective projects that can build on previous contributions from Australia as well as expand into new areas of collecting for crop wild relatives and new collaborative research.

The day before the visit, refurbishments had been completed to expand the capacity within the Millennium Seed Bank vault to accommodate the significant quantities of seed duplicated through the work of the global partnership. The original design for the vault included the ability to expand capacity, and this was the first such expansion. The facilities and expertise at the Millennium Seed Bank are world-class and serve as an inspiration to the Australian Seed Bank Partnership.

Our long-term and ongoing collaboration with the Millennium Seed Bank Partnership is an important element of Australia's seed banking success, and we will continue to participate and contribute to this critical global seed conservation partnership.

Dr Elinor Breman, Conservation Partnerships Coordinator for Australia at the Millennium Seed Bank Partnership, shows Peter Byron, General Manager at the Australian National Botanic Gardens, around the recently expanded dry room and cold rooms at the Millennium Seed Bank. At current collecting levels, the expansion provides sufficient storage capacity through to 2025. (Photo: Damian Wrigley, ASBP)

The Millennium Seed Bank Partnership has active projects in over 80 countries, with seed already stored in the Millennium Seed Bank from189 countries. The seeds in this room are being dried down to 15 per cent relative humidity to prepare them for long-term storage. Included among these crates and bags were collections from our Australian Partners from the previous year. (Photo: Damian Wrigley, ASBP)

Annual Steering Committee meeting at the Adelaide Botanic Gardens

Once a year, the Steering Committee of the Australian Seed Bank Partnership holds a face-to-face meeting to discuss current seed conservation efforts and explore opportunities for seed collecting, research and restoration for the year ahead. This year's meeting was held at the Adelaide Botanic Gardens on 1 June with extra discussions held in the days before. This year we focused on achieving our national priorities and goals, and improvements to data management, and had preliminary discussions on how the ASBP may undertake seed conservation beyond 2020.

The ASBP was very pleased to welcome Dr Sally Norton from the Australian Grains Genebank to join the discussions, and to host Dr Elinor Breman and Naomi Carvey from the Millennium Seed Bank Partnership at the Royal Botanic Gardens, Kew, UK. Among many discussions with our Partners, Elinor and Naomi provided a rundown on Kew's new Science Collections Strategy as well as on forthcoming improvements to the Millennium Seed Bank Data Warehouse.

Thank you to the South Australian Seed Conservation Centre and the Adelaide Botanic Garden for hosting us for the three days; to Dr Lucy A Sutherland for representing our governing council, The Council of Heads of Australian Botanic Gardens; and to all the Partners and Associates who

took the time to contribute to the numerous discussions and the hosted visits to seed banks by Elinor and Naomi during their visit to Australia.

The 2018 face-to-face meeting of the Australian Seed Bank Partnership Steering Committee was the first time all members were able to attend in person. We were lucky to have additional participants join us on the day to discuss specific projects from the past year. These meetings are a valuable opportunity for seed banks from around the country to come together and discuss the specifics of seed banking and obtain a better understanding of the differences in facilities throughout the country. (Photo: Clare Allen)

MSBP Seed Conservation Standards completed across the Partnership

Following the meetings in Adelaide, Elinor visited several Partner seed banks to conduct MSBP Seed Conservation Standards reviews. The MSBP Seed Conservation Standards are a set of 20 Standards covering all aspects of seed banking: collecting, processing, storage and duplication, viability monitoring, data management, seed distribution, and seedbank management. Over several years the MSBP has conducted these reviews across Australia's major seed banks, with the Partnership also piloting a couple of in-country reviews over the past 12 months.

As a result of this year's visit from the MSBP, all of the Partnership's facilities have been assessed against the Standards, with the results providing measurable and comparable information about the available capacity and capabilities throughout Australia's major seed banks. By undertaking these reviews, the Partnership can identify where modifications to collecting, processing and storage practices may improve the long-term viability of seed collections. These reviews have already helped Partners to further enhance existing practices and in some cases to secure support for upgrades to facilities that are improving the storage and monitoring of Australia's invaluable native seed.

Crop Wild Relatives collecting and Capacity Building at Kakadu National Park

In late April, Dr Sally Norton and Dr Katherine Whitehouse from the Australian Grains Genebank (AGG), Tom North from the Australian National Botanic Gardens and Ben Wirf from the George Brown Darwin Botanic Gardens spent a week at Kakadu National Park in the Northern Territory collecting seed and sharing their knowledge about seed conservation. Project participants included Kakadu National Park traditional owners, staff and school-based apprentices with a focus on women's rangers, as well as visiting scientists from Indonesia and Papua New Guinea.

The participants were provided with field-based training in the identification, collection and storage considerations for crop wild relative species. Crop wild relatives (CWR) are wild plant species that are genetically related to domesticated crops, but have not themselves been domesticated. They occur in many habitats throughout the world, and in Australia include species of *Ipomoea* (sweet potato), *Cajanus* (pigeonpea), *Glycine* (soybean), *Musa* (banana), *Oryza* (rice), *Sorghum* (sorghum), *Solanum* (eggplant) and *Vigna* (mungbean, cowpea).

The training covered aspects of plant identification and seed collection, as well as techniques for cleaning, drying and storing seed. Kakadu Rangers and traditional owners also shared their knowledge of the traditional management of *Sorghum* found within the National Park. The project team used a modified version of the Millennium Seed Bank's seed conservation drum kit to ensure collections arrive at seed banks across Australia and the UK in the best possible condition. It is hoped that the seed conservation techniques taught at Kakadu this year will support long-term plant conservation throughout Australasia.

During the field component, the team travelled south from Jabiru to the Mary River region, and managed to collect seed from *Cajanus, Galactia, Glycine, Oryza, Sorghum*

and Vigna. Following the field elements of the training, the international participants accompanied the seed collections back to the AGG in Horsham, Victoria where they received intensive lab-based training in the ways to process crop wild relative seeds for long-term storage. Duplicates have been prepared for the Millennium Seed Bank, Kew in the UK, where they will be stored for long-term ex-situ conservation and research.

Access and benefit-sharing arrangements are important considerations for this project, as Kakadu is jointly managed by the Australian Government and Traditional Owners. Any potential research for the commercialisation of genetic material from seed collected from Kakadu will require approval under the Australian Government's *Environment Protection and Biodiversity Conservation Act* (1999) as well as the support of relevant Traditional Owners and the Kakadu Board of Management. Additionally, Part 8A of *the Environment Protection and Biodiversity Conservation Regulations (2000)* controls the access to biological/genetic resources in Australia's National Parks via permits. These Regulations give effect to the third objective of the Convention on Biological Diversity – "the fair and equitable sharing of the benefits arising out of the utilization of genetic resources". The Regulations also ensure that Australia's genetic resources are used for research and development on mutually agreed terms, with prior informed consent and an equitable return to Australia, while ensuring the environment remains protected. The Australian Seed Bank Partnership is committed to ensuring that future CWR collecting in Australia is supported by meaningful access and benefit-sharing arrangements that ensure the benefits of commercialising genetic material flow back to the communities from whose country the seed is collected.

Jimmy Frans Wanma and Gibson Sosanika learning about seed collection of crop wild relative species. The skills and techniques learnt at Kakadu National Park can be used in future seed collecting efforts in West Papua and Papua New Guinea. (Photo: AGG)

The collecting team from the Crop Wild Relatives Project at Kakadu National Park (left to right): Jimmy Frans Wanma; Dr Katherine Whitehouse, Dr Sally Norton, Ben Wirf, Tom North and Gibson Sosanika. (Photo: AGG)

Learning to use a seed conservation drum kit (left to right): Jenny Hunter (TO), Jacqueline Cahill (Ranger), Ben Wirf (trainer), Chantelle Bayne (School-based apprentice). (Photo: AGG)

GOALS AND ACHIEVEMENTS

The Australian Seed Bank Partnership's national program to conserve Australia's native plant diversity has five goals. The Partnership's 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 five goals are:

1. Collecting and storing seed in secure seed banks as long-term insurance against loss of plant diversity.
2. Conducting research to improve both conservation and restoration outcomes from seed banking.
3. Developing national standards and improving capacity to enable conservation and restoration of biodiverse and resilient ecosystems.
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.
5. Securing and strategically managing our resources to strengthen and support the work of the Australian Seed Bank Partnership to achieve its vision.

Seed banking of Australian natives

The Partnership continued to target species of conservation concern, with many new collections added to Australia's seed banks. Our collectors continue to build upon previous efforts, further strengthening our national safety net for Australian plant species through ex-situ conservation. The first phase of the 1000 Species Project continues to benefit from concerted efforts across the Partnership, with approximately 250 species collected throughout the year. We are closing in on the target of 1000 species in the bank, although some of this year's collections still require formal identifications. Over the next year we hope to confirm these remaining collections and be in a position to celebrate this significant milestone.

Our collecting efforts underpin a comprehensive body of research that aims to improve our shared understanding of species biology. We have sought opportunities both in Australia and overseas where we have been able to contribute to the body of knowledge and collective capacity in seed science and plant conservation, and we are continuing to explore opportunities where we can continue to collaborate with others to secure better outcomes for plant conservation.

Phyllodes, pods and seeds of *Acacia tolmerensis* in low sandstone outcrops near Tolmer Creek, Litchfield National Park NT(Photo: Ben Wirf, GBDBG)

Conducting research at the National Seed Bank to improve both conservation and restoration outcomes from seed banking

Over the past twelve months, the National Seed Bank (NSB) has continued its research focus on endangered temperate grassy ecosystems, on significant species from Commonwealth Parks, and on completing germination trials for species in the threatened Alpine *Sphagnum* Bogs and Associated Fens ecological community.

Under the Alpine *Sphagnum* Bogs and Associated Fens threatened ecological community trials, the total data compilation covered 360 trials of 18 accessions of five species.

In the endangered temperate grassy ecosystems of Australia, fire maintains diversity of native forbs. This diversity of understorey species is desired in restoration, but many of the species are renowned as difficult-to-germinate, for example *Dianella revoluta*. Research published by Vening et al. in the National Seed Science Forum-inspired special issue of the *Australian Journal of Botany* showed that nicking significantly improved germination but smoke or heat did not. Josh Hodges delved further into the germination

ecology of *Dianella revoluta* and trialled combinations of fire cues and other processes such as stratification and after-ripening. Germination of *Dianella revoluta* increased from 15 per cent for fresh seed to up to 90 per cent when fire-cues (especially smoke, and smoke plus heat) were combined with warm stratification.

Josh's research was done in collaboration with Charles Sturt University, funded by the Goulburn-Broken Catchment Management Authority and the Capital Region Landkeepers Trust through the Christine Fifield Scholarship.

Early in 2018, the NSB also started an ANBG Friends-funded project to assess older collections. Successful conservation seed banking requires ongoing assessment of collections. Germination testing of collections remains the gold standard for viability testing. However, this is a labour-intensive practice and requires numerous seeds (e.g. >50) for statistically significant findings. With the recent acquisition of an X-ray machine, the NSB will now have an alternative method of assessing the health of seed collections. Whilst not a viability measure per se, non-destructive X-ray analysis of seeds can assess the collections for fruit/seed fill and embryo quality. These techniques could be particularly useful for many of our legacy collections that are long overdue for viability testing, but have too few seeds per accession for standard germination/viability tests to be conducted. Despite their small size, the legacy collections are valuable, dating back to the 1960s and collected from remote locations or rare species, or by notable botanists. This project proposes to obtain X-ray images of as many of these legacy collections as possible, to efficiently assess the collections and therefore inform curation and, if necessary, re-collection of these valuable species.

Seed from Dianella revoluta imaged at a scale of 1000:1. (Photo: Australian native seeds: a digital image library project supported through funding from the Australian Biological Resources Study (ABRS) Bush Blitz Program)

Anthocercis anisantha ssp. *collina* or Spiny Ray-flower is endemic to South Australia. The species is generally difficult to germinate with physiological dormancy and complex germination requirements. (Photo: Seed Conservation Centre, BGSH)

The NSB conducted 208 germination trials of 35 seed accessions from 13 species collected across three Commonwealth Terrestrial Reserves. Results from these trials will be utilised to investigate issues relating to collection, germination, propagation and banking that are impeding their use in rehabilitation programs in the Parks from where they were collected.

Research at the South Australian Seed Centre to help restoration

The South Australian Seed Centre at the Adelaide Botanic Gardens undertook germination research to support projects where ecologists were working to improve species biodiversity in local restoration programs. Some of the species included in the project were *Logania recurva, Hybanthus floribundus, Chorizandra enodis, Persoonia juniperina, Eremophila desertii* and *Gahnia trifida*.

During the 12 months, the Centre also obtained mycorrhizal fungal isolates from root and collar tissues of threatened orchids and has been able to successfully propagate several

species in the laboratory for growing-on in the nursery. This work was done in conjunction with a secondary school education program, and increased our capacity to utilise our orchid collections in the future.

We have started propagating 10 species to use in a seed orchard at the Adelaide Botanic Gardens to bulk up seed numbers for the seed bank. The species were selected because we were unable to obtain sufficient seed for a conservation collection from the wild populations.

Graeme Errington (fourth from the right) at the first week of the Seed Conservation Techniques course at Ōtari, Wellington, Aotearoa. (Photo: Ruth Bone, MSBP)

Building capacity for the biosecurity response to *Austropuccinia puccinii* (myrtle rust)

Our ongoing dialogue with botanists and conservation organisations across the Tasman resulted in the Partnership's participation in critical seed conservation training in New Zealand in December 2017. The Australian Seed Bank Partnership sent two seed conservation experts to the Auckland Botanic Gardens and the Otari Native Botanic Garden and Wilton's Bush Reserve near Wellington to join Te Tira Whakamātaki (the Māori Biosecurity Network) and the Millennium Seed Bank Partnership to deliver Seed Conservation Techniques workshops to a range of stakeholders, including representatives of 11 hapū (sub-tribes), iwi (tribes) and Māori organisations.

Jason Halford from the Brisbane Botanic Gardens and Graeme Errington from the Australian PlantBank provided an overview of the theory behind seed banking, practical considerations for identifying target species, the importance of coinciding field trips with seed availability, identifying best practice data management and the use of the Millennium Seed Bank's seed conservation drum kits. The courses were also a great opportunity for the trainees to share their knowledge and experiences of seed collection and processing of New Zealand's flora among the groups and with visiting trainers.

The ASBP trainers were able to impart more than two decades of experience through the fortnight of training and came away with a great deal of learnings from the New Zealand context. The experience will also improve our ability to engage with traditional owners both in Australia and overseas to improve conservation outcomes for native plants with both cultural and ecological significance.

The Millennium Seed Bank Partnership's seed conservation kits are a practical resource to support scalable, localised seed collections. The kits contain specialist equipment for the collection, processing and drying of seed for those that do not have access to established seed bank infrastructure. The Australian Seed Bank Partnership developed a modified Australian version of one of these kits for use at Kakadu National Park during our recent Crop Wild Relatives project (pages 9 and 10). (Photos: Gibson Sosanika)

Discussions on biosecurity provided a valuable insight into the management of the same biosecurity threat in different geographical, cultural and political realities. Myrtle Rust potentially impacts far fewer species in New Zealand than Australia, but these are no less ecologically, culturally or commercially important.

The Australian Seed Bank Partnership would like to thank the host botanic gardens and the New Zealand Ministry for Primary Industries for contributing funding to support our participation. We are also grateful to the Garfield Weston Foundation for supporting this training through the Global Trees Seed Bank Project. We would also like acknowledge the effort of Ruth Bone, Bobbi Hope and Bev Maynard from the Millennium Seed Bank Partnership and Waitangi Wood from Te Tira Whakamātaki for coordinating this training and providing us with the opportunity to participate.

Jason Halford (fourth from the left) at the second week of the Seed Conservation Techniques course at the Auckland Botanic Gardens. (Photo: Ruth Bone, MSBP)

Sharing knowledge from the National Seed Science Forum

In 2016, the Australian Seed Bank Partnership hosted the National Seed Science Forum. A significant outcome from the forum was the scientific collaborations resulting from its many symposia and workshops. Early in 2018, the CSIRO's *Australian Journal of Botany* published a series of papers that sought to illustrate the contribution of Australian seed science research to restoration, conservation and food security. Each of these papers is the collaboration of seed scientists seeking to synthesise the outcomes of the forum or extend our understanding of ex-situ plant conservation through the application of seed science.

Research findings featured in the issue cover aspects of seed biology and ecology, banking crop wild relatives, ex-situ conservation in the South Pacific, and consideration of various restoration approaches as well as new seed technologies.

Offord, C. (Ed.). (2017). Seeds at the Forefront: the Contribution of Australian Seed Science to Restoration, Conservation and Crop Security [Special Issue]. *Australian Journal of Botany*, 65(8) 601-690.

Securing and managing our resources to save more seeds

The Partnership has continued to build on our long and productive collaboration with the Millennium Seed Bank Partnership to secure additional collections of seed by delivering our first project focused on crop wild relatives. This important body of work provides not only new genetic material for genebanks but also valuable experiences in engaging with traditional owners and international scientists to exchange knowledge and build relationships that will hopefully lead to further collaborations in the future.

In late 2017, the Partnership, in collaboration with the Millennium Seed Bank Partnership, also developed a comprehensive program of work that when funded, will support the collection of almost 1000 additional Australian species and complementary research across a range of landscapes and genera. We will continue to work with the MSBP to secure funding and more native species collected from across the continent for future research and restoration.

The ripe fruit of endagered *Solanum sulphureum* collected on private property near Taree, NSW. (Photo: Gavin Phillips RBGDT)

ACHIEVEMENTS AROUND AUSTRALIA TOWARDS OUR 1000 SPECIES TARGET

Western Australia

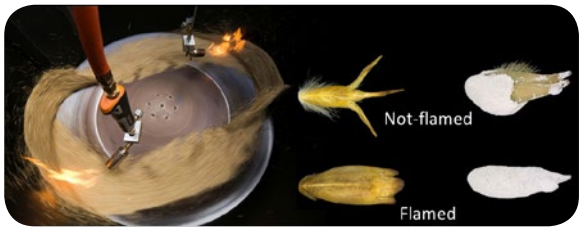
Western Australian Seed Technology Centre

New research project in ecological engineering to address broad-acre direct seeding

This year the Botanic Gardens and Parks Authority commenced the first year of a four-year project. The project is focusing on advancing seed enhancement technologies and developing engineering solutions to improve precision delivery of native seeds in adverse rocky, uneven and sloped landforms that are common in rehabilitation sites across the mining sector. Key partners in the project include the School of Biological Sciences and the Faculty of Engineering, Computing, and Mathematics at The University of Western Australia, along with industry partners BHP; Rio Tinto; Greening Australia; and researchers from the United States at the University of California, Davis; Brigham Young University; and the University of Nevada, Las Vegas.

One focus of this research project is to continue to advance the use of the University of Western Australia and Botanic Gardens and Parks Authority invention of 'flash flaming'.

Collecting seed from *Lawrencia helmsii* in Western Australia. (Photo: Luke Sweedman, BGPA)



Seed flaming is achieved by rapidly rotating seeds inside a drum and exposing the seeds to a flame in a controlled manner. This treatment removes hairs, awns and other appendages on seeds that inhibit their flow through direct seeding machinery and would otherwise preclude the application of seed enhancement treatments such as seed coatings. (Photo: BGPA)

'Flash flaming' removes unwanted hairs and appendages from seeds to enhance their geometric properties for precision seeding through mechanised seeding equipment. This purpose-designed and manufactured device was a winner in the Western Australian Government's WA Innovator of the Year Awards in 2016.

Funded through the Australian Government Department of Industry, Innovation and Science, the project was formally launched with a week-long workshop in June 2018, with participants from all project partners spending two days visiting mine sites in the Pilbara, and three days capturing the state of scientific knowledge on ecological and engineering processes driving rehabilitation. In particular, participants spent time critically evaluating direct seeding machinery used in the rehabilitation market to identify potential improvements in design that would enhance the precision with which a diversity of seeds can be sown into rehabilitation sites. Testing of some initial engineering modifications to seeding machinery is planned for the summer of 2018-19.

Threatened Flora Seed Centre

Ex-situ seed collections are said to be an insurance policy against extinction. Twenty-five years ago, the now Department of Biodiversity, Conservation and Attractions invested in establishing the Threatened Flora Seed Centre as a conservation seed bank to assist Western Australia's native species to avoid extinction. This investment in plant conservation is already paying dividends, with numerous native species benefiting from its facilities and expertise.

Verticordia spicata ssp. *squamosa* (Scaly-Leaved Featherflower) is a Critically Endangered plant from

the mid-west of Western Australia, which is currently known from less than 10 plants in the wild. This species was the focus of two translocation projects over the last year. The first project, 30 plants by 2020, part of the Australian Government's Threatened Species Strategy, saw seedlings planted into two secure locations. The second project, funded by the Northern Agricultural Catchment Council, enabled another planting to take place at a third translocation site. The seed used to grow the plants used for these projects was collected more than twenty years ago and had been stored in the seed vault of the TFSC until a portion of the seed was withdrawn and germinated. Tangible evidence of the success of ex-situ seed conservation was obtained when the seed was found to be as viable as it had been when it was first collected.

To boost stocks of seed in the ex-situ collection, further collections were planned for the summer of 2017-18, but due to poor flowering and a low number of plants, seed was unable to be collected from the wild populations. Additional seed was able to be collected from an existing translocation site that did flower. This involved placing bags over the flowers after they had been pollinated to catch the mature fruit when it was shed from the plant. Some of the seed from this collection is currently being germinated to determine the seed viability, with the remaining seed stored for safe-keeping. The seedlings produced from this testing will be planted out next year to boost plant numbers at the three translocation sites. This species was one of twelve threatened species germinated for translocation by the TFSC in the last year.

The *Verticordia spicata* ssp. *squamosa* pollinated by a *Gasteruptiid* Wasp. (Photo: Andrew Crawford, DBCA)

South Australia

The South Australian Seed Conservation Centre (SASCC) strategy for the 2017-18 collection season was focused on the Eyre Peninsula, South East and Mount Lofty herbarium regions. A total of 156 collections were made during the season, with 43 of these being new taxa to the SA seed bank. Provenance collections were made for 46 species from plant populations in different areas to previous collections within the state. In SA, many small plant populations are in decline, and collecting seeds while the plants are still extant is important so that the diversity in outlying populations is represented in our collections.

Highlights from the season included three new threatened species that were collected from the South East region including the Southern Tick-trefoil (*Desmodium gunnii*), Juniper Wattle (*Acacia ulicifolia*) and Feather-leaf Buttercup (*Ranunculus amplus*). These species were recorded in South

Ranunculus amplus was only recently discovered in South Australia in a small population in the Mount Gambier bioregion. (Photos: BGSH)

Australia for the first time only recently, and are currently known from only small, single, localised populations. Some information about these species is now available on the 'Seeds of South Australia' – www.saseedbank.com.au.

Two SASCC volunteers with exceptional knowledge of South Australian flora, Denzel Murfet and Kieran Brewer, travelled to the Anangu Pitjantjatjara Yankunytjatjara Lands to explore the flora and collect seeds. Despite dry conditions, they made 24 seed collections, including 11 species new to the SA seed bank. As well as making important collections they made connections with people in the region that will facilitate seed collecting trips in the future.

During a scouting trip to the Gawler Ranges, populations of several threatened species were marked for collection for the 1000 Species Project. However, lack of follow-up rain resulted in very low seed set for these species and they will remain targets for another, more favourable season. Sixteen collections were made for the 1000 Species Project and eight collections were made for the C4 Photosynthesis project; these were endemic to Australia and represented new species to the Millennium Seed Bank.

Northern Territory

The 2017-2018 collecting season was another busy one for the George Brown Darwin Botanic Gardens. Most of our field work took place in Litchfield, Kakadu and Judbarra / Gregory National Parks, as well as targeted collecting in specialised habitats such as the Howard River sand plains in Darwin's rural area.

Darwin and the surrounding areas were struck by Category 2 Cyclone Marcus in March 2018, which caused widespread damage to vegetation and some infrastructure, but fortunately had little impact on collecting activities.

In April 2018, George Brown Darwin Botanic Gardens took part in a field trip to Kakadu National Park, joining staff from the Australian National Botanic Gardens, the Australian Grains Genebank, and Kakadu National Park Indigenous Rangers to collect crop wild relatives. The trip yielded some interesting opportunistic collections for other ASBP projects including *Acacia* sp. El Sharana (N.B. Byrnes 1326), an undescribed shrub endemic to the Top End.

A second trip to Judbarra / Gregory National Park in the south-west of the Top End yielded small but valuable collections of *Isotropis faucicola*, a rare small shrub restricted to escarpments and gorges of the Victoria River, as well as *Acacia repens*, another rare shrub known in the Northern Territory from only one location. Its extent consists of a few isolated populations near Jasper Gorge, including one herbarium collection from the Carr Boyd Range in Western Australia.

Other interesting collections secured this year include the near threatened shrubs *Helicteres tenuipila*, endemic to Litchfield National Park, and *Neobyrnesia suberosa*, a sandstone cliff-dwelling relative of the *Boronia* genera that is only known from Kakadu National Park and western Arnhem Land.

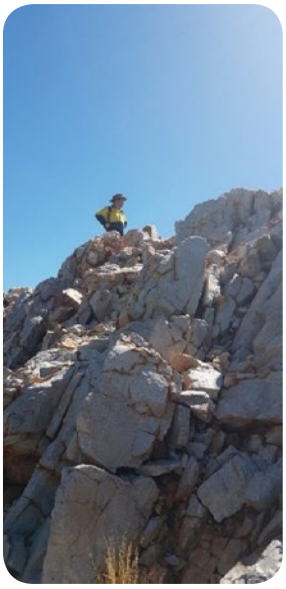
George Brown Darwin Botanic Gardens also contributed a number of new collections for the Australian Seed Bank Partnership's C4 Photosynthesis Project and Global Trees Seed Bank Project. One particularly interesting species was the data-deficient *Brachychiton* sp. Wangi, a small, undescribed Northern Territory endemic tree with large, lobed leaves and tuberculate pods that occurs sporadically from Litchfield National Park, south to the Douglas-Daly Region and west to Wadeye (Port Keats).

We spent around 25 days in the field and travelled more than 5000 km for the year, securing in excess of 80 seed collections. Approximately 40 of these are new additions to seed banks, and 16 are species of conservation significance. All of these collections contribute to the conservation and botanical knowledge of the Northern Territory's unique native flora.

Ben Wirf from the George Brown Botanic Gardens pressing voucher specimens at Victoria River, Northern Territory. (Photo: GBDBG)

Queensland

During May, the Seeds for Life project conducted a field trip to the North West Highlands and Gulf of Carpentaria to focus mostly on tree species for the Global Trees Seed Bank Project and C4 Photosynthesis Project. Beginning in Mount Isa, our collectors travelled east to Cloncurry, north to Four Ways and Burketown, then west through Doomadgee to Cliffdale (Hells Gate Roadhouse) and Westmorland. Following on from time spent in this botanically amazing landscape, the field trip returned east to Normanton and south to Mt Isa via Kajabbi.



Collecting in the North West Highlands around Mount Isa, Queensland. (Photos: Jason Halford, BBG)

On the back of a good wet season, the trip was a huge success with 42 collections made, including the vulnerable species *Eucalyptus nudicaulis* from the Mount Isa area and an undescribed species of grass-*Panicum* sp. Westmorland-that scientifically is only known from one collection made from the billabongs of a single creek.

The Vulnerable *Eucalyptus nudicaulis* near Mount Isa (Photos: Jason Halford, BBG)

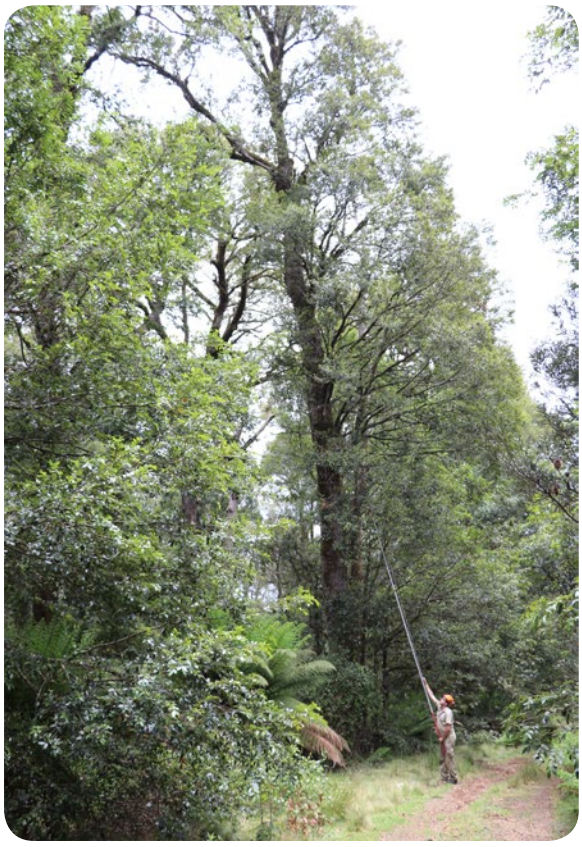
New South Wales

The Millennium Seed Bank Partnership-funded Global Trees Seed Bank Project remained a significant focus for this year's seed collecting program, with an additional four New South Wales tree species collected for the project. After many years of observation, this year saw the first mast event for *Nothofagus moorei* (Antarctic Beech) requiring an intensive seed collecting effort. Low seed-fill rates necessitated very large multi-provenance collections to be made of this relictual Gondwanan species to obtain sufficient yet small quantities of viable seed. Other significant tree seed collections included rare or uncommon species such as the newly described *Eucalyptus expressa* from Wollemi National Park and the endangered *Kardomia silvestris* from the Dorrigo area.

Funding from the Millennium Seed Bank Partnership's Fieldwork Funds project, in conjunction with funding from the New South Wales Government for a Saving Our Species project, enabled PlantBank to secure good seed collections of the vulnerable terrestrial orchid, *Diuris praecox*. This species is found along the coast from Nelson Bay, around Newcastle and further south in the Central Coast. Habitat loss as a result of urban development has resulted in previously widespread populations becoming fragmented throughout its range.

Collecting efforts this year saw PlantBank achieve a significant milestone, with 60 per cent of the 372 state-listed threatened flora now held in the seed vault.

Linking with the Saving our Species program provided additional funding support to secure seed collections for conservation projects. These included the vulnerable *Discaria nitida* (Leafy Anchor Plant) on the subalpine plains of Kosciuszko National Park and *Neoastelia spectabilis* (Silver Sword Lily) from cliffs within New England National Park. As part of this work, the team from PlantBank delivered seed conservation training for Saving Our Species project officers and also led translocation planning and collections for high priority NSW species including the critically endangered *Hibbertia puberula* subsp. *glabrescens (*Bankstown Hibbertia).



Seedbank Officer Gavin Phillips collecting fruits from the tall trees of *Nothofagus moorei* on Barrington Tops. The species is known to grow as high as 50 metres, so our collectors often need some additional tools to help secure a collection. (Photo: Katherine Willis, RBGDT)

In NSW, the Western Sydney infrastructure projects are creating consistent demand for threatened species conservation actions with the PlantBank and Australian Botanic Gardens, Mt Annan. The nursery team are actively involved in seed collection and the propagation of three threatened species whose native habitat occurs within the footprint of the Western Sydney Airport development.

Commonwealth

This year saw the National Seed Bank contribute to local, national and international plant conservation through the collection and banking of new seed accessions, the development of germination protocols, the supply of seeds for research, and the production of seedlings for display at the Australian National Botanic Gardens in Canberra.

The National Seed Bank accessioned 224 collections of seed from 76 species, including 67 species from Commonwealth National Parks and three species listed under the *Environment Protection and Biodiversity Conservation Act (1999)*. Collections were made over 79 field days across 28 field trips. Local trips throughout the Australian Capital Territory were assisted by 18 'Seedy Vols', our team of seed-collecting volunteers. These trips contributed collections that will be used for long-term ex-situ conservation of local flora. We also made significant contributions to the Partnership's Global Trees Seed Bank Project, Crop Wild Relatives Project and Fieldwork Funds Project, with collections and training undertaken in Kakadu National Park and Christmas Island National Park respectively.

At the end of January 2018, the National Seed Bank completed work on a Bush Blitz grant to digitally image under-microscope 1000 species from our collection. The images are available via the Australian Plant Image Index and *Atlas of Living Australia*, with images referenced to their associated herbarium specimen and new trait data. We have continued the project with the assistance of volunteers, and have since imaged a further 139 species.

The National Seed Bank worked on 10 conservation and research projects in partnership with universities, government agencies and private donors that made various grants or in-kind contributions to help achieve the research and conservation goals of the projects. We continue to use our collections for biodiversity research through partnership projects with the release of 16 additional collections to external parties for not-for-profit research, conservation and education. Collections of the culturally significant Quandong plants from Uluru National Park have been a focus of research to develop species-specific germination protocols and a translocation plan for the species in Uluru National Park. Overall, a total of 624 germination tests were conducted this year, and 1172 resultant seedlings were transferred to the ANBG nursery to be grown-on for display in the gardens.

Santalum acuminatum is culturally significant plant for the Anangu in central Australia. The species is hemiparasitic meaning it is partially parasitic, relying on a host plant for water and soil nutrients. In this case, the ANBG Nursery have used *Acacia tetragonophylla* as the host plant. (Photo: Caroline Chong)

Tasmania

Fieldwork this season focused on locating potentially collectable populations of so far uncollected endemic species. Although individuals for most of the target species were found, targetable populations that can deliver conservation-sized seed collections have yet to be located in most cases. Surveying mostly focused on the Great Lake/ Lake Augusta area and the areas surrounding the Arve Loop Forest Reserve.

Surveying in the Great Lake / Lake Augusta area recovered several more populations of threatened species. Additional populations of *Stackhousia pulvinaris* were discovered building on last year's finds. Several populations of *Viola cunninghamii* were also found. Most notably three more populations of *Cardamine tryssa*, which we rediscovered in Tasmania last year, were also found, which suggests that this species may in fact be seriously overlooked. One population of ~200 *Cardamine* plants was targeted for collecting, but sadly heavy browsing removed nearly all the fruiting spikes and the collecting attempt was abandoned. An attempt was made to collect *Viola cunninghamii,* but, due to the diffuse nature of the plants and rapid maturing of the fruits, only 110 seeds were harvested. These seeds have been sown and an attempt will be made to develop a seed orchard in the Royal Tasmanian Botanical Gardens nursery.

Surveying this season recovered a large population of *Ranunculus setaceus*, a small, under-reported, endemic alpine buttercup with grass-like leaves. Previous encounters with this species have been frustrating as populations are

Viola cunninghamii, otherwise known as the Alpine violet, was collected from the shores of Tasmania's Lake Augusta in the Central Plateau Conservation Area. (Photo: James Wood, RTBG)

small, diffuse and growing amongst other semi-aquatic species, typically including several other *Ranunculus* species. This season, however, we found an area with several small pools almost exclusively dominated by *Ranunculus setaceus,* which delivered 5,600 seeds for the seed bank.

Cardamine tryssa was found growing in recently burnt woodland near Liawenee, close to Tasmania's Great Lake. This is the first of three new populations discovered this year. (Photo: James Wood, RTBG)

Victoria

Over the past 12 months, the Victorian Conservation Seedbank focused our collecting activities in eastern Victoria, and with contributions from the Orchid Conservation Group at the Royal Botanic Gardens Victoria, we managed to bank 22 species that are new to the Partnership's collections. Seven of these are listed under the *Environment Protection and Biodiversity Conservation Act 1999,* including several *Caladenia* (Spider Orchid) species.

With the Victorian Conservation Seedbank collecting much of the 'low hanging fruit' throughout Victoria over the past 14 years, relationships with other organisations and individuals have been critical to securing collections of taxa that have previously eluded our collectors. In addition to the Orchid Conservation Group, we have teamed up with local naturalists, Conservation Management Authorities, Parks Victoria, the Victorian Department of Land, Water and Planning, Universities, and the Euroa Arboretum to help determine the timing and collection of several evasive species.

A particular highlight was the collection of the Victorian endemic, *Astelia australiana,* which grows in montane Cool Temperate Rainforest gullies in the Otway Ranges and Central Highlands of Victoria. The species nearest relative can be found over 2500 km away in the wet forests of New Zealand. Despite its relatively close proximity to Melbourne (about 80 km), this species has long eluded collection by the Victorian Conservation Seedbank, primarily due to the largely vegetative mode of reproduction of the species, with fruiting a rather rare occurrence.

PhD student Linda Parker from Melbourne University has been studying the ecology of *A. australiana,* conducting a canopy reduction experiment in an attempt to promote flowering of this generally frigid species. Working closely with Linda, whose experiment was successful in promoting flowering, the Victorian Conservation Seedbank was able to make a promising seed collection. Initial seed germination observations by Linda had suggested high initial viability but then poor viability of the species following storage, suggesting it may be recalcitrant. We are now undertaking a study in conjunction with Melbourne University to investigate the effect of storage conditions on the species. Our initial findings have identified that seed from *A. australiana* can tolerate drying and freezing, with good germination achieved both before and after storage. Hence it is probably not recalcitrant as first suspected, and seed banking can be considered an important element in its conservation planning for the species.

Former Seedbank Co-ordinator Jeff Jeanes on an unsuccessful mission to secure seeds of *Astelia australiana* (Photo: RBGV)

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. As part of our ambitious program of work, we will focus on the following projects in 2018–19.

Global Trees Program

The Partnership has secured an additional year of funding from the Garfield Weston Foundation's Global Trees Seed Bank Program through the Millennium Seed Bank Partnership. We have already identified our target species for this fifth year of the project with 89 collections of new species identified for banking. Every Partner throughout the country will be out collecting for this final year and we hope to secure some special species the critically endangered Norfolk Island endemic, *Melicytus latifolius* and the endangered *Polyscias* sp. Douglas-Denison, a small evergreen tree from Tasmania that fails to set seed in the wild. It is hoped cuttings secured from the species can be used to establish a seed orchard for future seed collections.

Seedbank Officer Gavin Phillips reaching the high branches of *Eucalyptus expressa* using a slingshot and weighted line. Many of our Global Trees Seed Bank Project collections are secured using novel techniques. (Photo: Jack Herbert, RBGDT)

Collecting seed in Australia's remote areas, like this stop at Cherry Island near Norseman to collect *Acacia collegialis*, requires the right gear to keep our seeds and collectors in top condition. We keep costs to a minimum by bringing our accommodation with us. For the team at BGPA, their caravan also doubles as a climate controlled field lab, a welcome retreat when processing seed during the scorching Western Australian summer. (Photo: Luke Sweedman)

Seed supply standards

The Partnership is committed to supporting opportunities for the Australian Network for Plant Conservation to bring together a consortium of conservation and restoration agencies to prepare national seed standards. National seed standards will provide guidance for practitioners and community groups to realign their seed collecting practices in a sustainable manner. This will reduce the pressure on natural populations and ecosystems that are commonly targeted as seed sources. National seed standards will ensure that only high quality seed is used for restoration, improving the success of these projects and associated biodiversity outcomes. Having and applying seed standards will also improve the efficiency and cost-effectiveness of seed collection and use for restoration and research.

Fruiting bodies of *Eucalyptus dolorosa*. The species is otherwise known as the Dandaragan Mallee as it occurs in only one population west of Dandaragan in Western Australia. It is listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* due to low seed recruitment and the species' restricted range of occurrence. (Photo: Andrew Crawford, DBCA)

Ben Wirf from GBDBG securing herbarium specimens to accompany crop wild relative seed collections back to the seed bank. Every seed collection has an accompanying herbarium specimen to ensure the accuracy of the identification of species. (Photo: Gibson Sosanika)

Crop Wild Relatives

Next year the Partnership will again work closely with our Associate organisation, the Australian Grains Genebank, to secure additional collections of crop wild relative species and to deliver capacity-building training in seed collecting. Building on this year's project, we are hoping to revisit Kakadu National Park and work with Indigenous Rangers to identify target species, secure collections and share knowledge that will help inform both in-situ and ex-situ conservation efforts. Revisiting Indigenous Rangers will give our collectors the opportunity to see how the seed conservation drum kits have worked for the local collectors. Feedback from the Kakadu National Park Rangers will enable us to make modifications to the design of future kits.

The break in the wet season is the ideal time to get out to Kakadu and secure collections from across the National Park. Timing the collecting of seed can be difficult, with species ripe for harvest at different times throughout the season. Our collectors are watching the weather closely and if all goes well with the break in the wet season, they are likely to be back out across the National Park sometime in March 2019.

The crop wild relatives collecting team scouring Kakadu National Park in early 2018 for wild Cajanus (Pidgeon pea). (Photo: AGG)

Australian Seed Bank online

Providing open access to accurate data is an ongoing commitment of the Partnership. We continue to seek opportunities to improve the data we collect and share through the Australian Seed Bank online. Our efforts this year to refine our data are helping to ensure we maintain accurate records of seeds held in banks across the Partnership. These records also help to identify what taxa require ongoing collecting efforts during future field work.

We will continue to make our data available online to support opportunities for collaboration across the botanical, conservation and restoration communities. The Partnership and Atlas of Living Australia are exploring ways to improve the information we provide, ensuring this online resource provides data on seed collections and germination protocols that can be shared, retrieved and utilised.

Plants on the Precipice Program

Our Plants on the Precipice Program continues to be an area of focus for the Partnership. Ongoing pressure from climate change, land-use change, pests and disease continue to threaten the future survival of Australia's native species. We have developed three potential projects under the Plants on the Precipice Program that would target key areas for ex-situ conservation collecting. These projects will focus on alpine and montane areas, biodiversity hotspots, and coastal and lowland environments. The Partnership is continuing to work with the Royal Botanic Gardens, Kew to secure a funder to support this important body of work. In the lead up to 2020 and the end of the International Decade for Biodiversity, it is critically important that we continue to secure the genetic material that underpins our plant diversity for use in future conservation and research.

A coastal remnant near The Skerries, Wingen Inlet, Victoria. Species located in close proximity to the coast are at significant risk of inundation as a result of rising sea levels. The Plants on the Precipice projects will target species in priority areas at greatest risk of surviving the impacts of climate change and other threats. (Photo: Damian Wrigley, ASBP)

HOW YOU CAN HELP

The Australian Seed Bank Partnership is taking decisive action to safeguard Australia's plants. Seed banking is a principal tool for the safe and efficient storage of wild plant genetic diversity, and provides a resource and knowledge base to support the management of plant species and communities.

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

Digitaria porrecta is listed as endangered in New South Wales with only 200,000 individual plants thought to remain in the wild. Collectors like Gavin Phillips from PlantBank scour the countryside to secure collections. *Digitaria porrecta* prefer grassland, woodlands or open forests but are often found along roadsides and travelling stock routes. Fire, farm machinery and trampling and grazing from livestock can seriously threaten the survival of this endangered taxa. (Photo: Jessica Wait RBGDT)

Collecting and banking native seed is a time-consuming enterprise and we couldn't do as much as we do without the help of our dedicated volunteers. If you would like to join us to collect in the field, sort seeds in the laboratory, or interrogate our collections data, then we would love to hear from you.

Volunteers can also help the Partnership to raise awareness and encourage public support for plant conservation by contributing to the Partnership's website and social media.

If you are interested in becoming a volunteer or would like to find out more about how you can help, please visit our website or contact us at coordinator@seedpartnership.org.au.

Volunteer with one of our Partners

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Rytidosperma pumilum, otherwise known as Feldmark Grass, is listed as Vulnerable at both the state and national levels. In Australia it is found only in the Windswept Feldmark-the sparse, low vegetation of the exposed rocky alpine slopes and ridges of the Main Range of Kosciuszko National Park, one of the harshest environments in the country. Like many of our threatened species, more resources are needed to help secure its future. (Photo: Gavin Phillips, RBGDT)

ANNUAL FINANCIAL REPORT for the year ending 30 June 2018

The Australian Seed Bank Partnership is a trading name of The Council of Heads of Australian Botanic Gardens Incorporated (CHABG), as well as its primary conservation program. 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 deductible gift recipient under Subdivision 30-BA of the *Income Tax Assessment Act 1997* for the operation of '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.

Statement by the Management Committee

for the year ended 30th June 2018

In the opinion of the Management Committee of CHABG Inc

the attached financial statements and notes thereto comply with Accounting Standards

the attached Income Statement is prepared so as to give a true and fair view of the Financial Performance of the association for the year ended 30th June 2018

the accompanying Balance Sheet is prepared so as to give a true and fair view of the Financial Position of the association as at 30th June 2018

there are reasonable grounds to believe that the CHABG Inc. will be able to pay its debts as and when they fall due and payable

that no officer of this association, or any firm of which an officer is a member, or any body corporate in which an officer has a substantial financial interest has received or is entitled to receive any benefit from a contract with this association, nor has any officer received any direct or indirect pecuniary benefit from this association.

SIGNED In accordance with a resolution of the Management Committee

This 18th day of OCTOBER 2018
On behalf of the Management Committee

.....
(Name: Tim Entwisle)
(Position: Chair, CHABG)

.....
(Name: Judy West)
(Position: Secretary - Ordinary Member, CHABG.)

CHABG Inc

Annual Financial Statements

2017/2018

Independent Auditor's Report

for the year ended 30th June 2018

To the Members CHABG Inc

Scope
The financial report and management committee's responsibility

The Management Committee are responsible for the financial report, being a special purpose financial report, that gives a true and fair view of the financial position and performance of CHABG Inc, for the year ended 30th June 2018 and that it complies with Accounting Standards in Australia. This includes responsibility for the maintenance of adequate accounting records and internal controls that are designed to prevent and detect fraud and error, and for the accounting policies and accounting estimates inherent in the financial report.

The Management Committee have determined that the accounting policies used are consistent with the financial reporting requirements of the *CHABG Inc*, and are appropriate to meet the needs of the members.

The financial report comprises the balance sheet, income statement, accompanying notes to the financial statements, and the management committee's statement, for CHABG Inc.

Audit Approach

I conducted an independent audit of the financial report in order to express an opinion on it to the members of the association. The audit was conducted in accordance with Australian Auditing Standards in order to provide reasonable assurance as to whether the financial report is free of material misstatement. The nature of an audit is influenced by factors such as the use of professional judgment, selective testing, the inherent limitations of internal control, and the availability of persuasive rather than conclusive evidence.

Therefore, an audit cannot guarantee that all material misstatements have been detected.

I performed procedures to assess whether in all material respects the financial report presents fairly, in accordance with the *Associations Incorporation Act 1991*, including compliance with Accounting Standards in Australia, and other mandatory financial reporting requirements in Australia, a view which is consistent with our understanding of the association's financial position, and of its performance as represented by the results of its operations, changes in equity and cash flows.

I formed my audit opinion on the basis of these procedures, which included:
> Examining, on a test basis, information to provide evidence supporting the amounts and disclosures in the financial report
> Assessing the appropriateness of the accounting policies and disclosures used and the reasonableness of significant accounting estimates made by the committee.

While I considered the effectiveness of management's internal controls over financial reporting when determining the nature and extent of my procedures, my audit was not designed to provide assurance on internal controls. I performed procedures to assess whether the substance of business transactions was accurately reflected in the financial report.
These and my other procedures did not include consideration or judgment of the appropriateness or reasonableness of the business plans or strategies adopted by the management committee of the association.

Independence
I am independent of the association, and have met the independence requirements of Australian professional ethical pronouncements and the *Associations Incorporation Act 1985*. I have given to the management committee of the association a written auditor's independence declaration, a copy of which is included in the financial report. In addition to my audit of the financial report, I was engaged to undertake the services disclosed in the notes to the financial statements. The provision of these services has not impaired my independence.

Qualification
As is common for organisations of this type, it is not practicable for the management committee to maintain an effective system of internal control over its cash income prior to initial entry into the accounting records. Accordingly, my audit in relation to these items was limited to the amounts recorded in the books and records for the financial year and I therefore am unable to express an opinion whether proceeds of cash income obtained are complete.

Audit Opinion
In my opinion, except for the effects on the financial report of such adjustments, if any, as might have been required had the limitation on my audit procedures referred to in the qualification paragraph not existed, the financial report of CHABG Inc, is in accordance with:
a) The Associations Incorporation *Act 1991*, including:

i. Giving a true and fair view of the financial position of CHABG Inc and of its performance for the year ended on 30 June 2018

ii. Complying with Accounting Standards in Australia and the Associations Incorporations *Act 1991*

b) Other mandatory financial reporting requirements in Australia.

Signed this the 2 day of September 2018

Tony Trimboli
CPA Australia

Auditor's Declaration of Independence
for the year ended 30th June 2018

To the Management Committee of CHABG Inc.

I declare that, to the best of my knowledge and belief, there have been no contraventions of:

(i) The auditor independence requirements of the *Associations Incorporation Act 1991* in relation to the audit

(ii) Any applicable code of professional conduct in relation to the audit.

Signed this the 2 day of September 2018

Tony Trimboli

Tony Trimboli
CPA Australia

CHABG Inc. Statement of Expenditure and Income

	2017–18	2016–17
Income		
Membership Contribution - Annual Subscription	13,000	11,000
Membership Contribution - Data Curation	44,150	
Donation		250
Reimbursement New Zealand - Seed Conservation Training	2,554	
Grant Funding - Royal Botanic Gardens Kew - Fieldwork Funds	81,860	90,920
Grant Funding - Royal Botanic Gardens Kew - Global Trees	276,550	241,847
Grant Funding - Royal Botanic Gardens Kew - C4 Grasses	31,447	30,197
Grant Funding - Royal Botanic Gardens Kew - Wild Crop Relatives	39,378	
National Seed Science Forum Revenue		898
Interest	336	296
Total Income	**489,275**	**375,408**
Expenditure		
General Expenditure	3,098	5,091
Data Curation	34,000	
New Zealand - Seed Conservation Training	2,833	
Dept of Environment - Phytophthora Research		46,500
Grant Funding - Royal Botanic Gardens Kew - Fieldwork Funds	79,288	116,395
C4 Grass Collectionns - Royal Botanic Gardens Kew Funds		34,000
Grant Funding - Royal Botanic Gardens Kew - Global Trees	112,653	224,915
Grant Funding - Royal Botanic Gardens Kew - Wild Crop Relatives	13,612	
Total Expenditure	**245,484**	**426,901**
Surplus/Deficit	**243,791**	**(51,513)**

CHABG Inc. Balance Sheet

	2017–18	2016–17
Current Assets		
Deposit account 224159	321,266	98,513
Deposit account 224167	134,746	116,606
Sundry Debtor	2,000	
ATO - GST refundable	921	223
Total Assets	**459,133**	**215,342**
Liabilities		
ATO - GST Payable		
Net Assets	**459,133**	**215,342**

Equity	(215,342)	(266,855)
Surplus/Deficit for year	(243,791)	51,513
Retained earnings	**(459,133)**	**(215,342)**

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 2017–18 were:

Prof Tim Entwisle – Director and Chief Executive, Royal Botanic Gardens Victoria (CHABG Chair November 2015–present)

Mr Dale Arvidsson – Curator, Brisbane Botanic Gardens

Mr Mark Webb – Chief Executive Officer, Botanic Gardens and Parks Authority (Kings Park)

Mr Gary Davies – Director, Royal Tasmanian Botanical Gardens

Mr Bryan Harty – Director, George Brown Darwin Botanic Gardens

Dr Brett Summerell – Executive Director, Royal Botanic Gardens and Domain Trust

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

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

We would like to recognise the contribution of **Mr Mark Fountain**, Deputy Director, Royal Tasmanian Botanical Gardens and **Jimmy Turner**, Director of Horticultural Operations, Royal Botanic Gardens and Domain Trust.

Tim Entwisle

Dale Arvidsson

Mark Webb

Gary Davies

Bryan Harty

Brett Summerell

Lucy Sutherland

Judy West

The Australian Seed Bank Partnership grew out of the Royal Botanic Gardens, Kew's Millennium Seed Bank Project which supported Australian institutions to help achieve the Project's goal of banking 10 per cent of the world's plant species by 2010. We continue to support Kew's endeavour to bank 25 per cent of the world's flora by 2020.

The Partnership program is carried out in collaboration with our partner organisations (see page 35). Other organisations (our Associates) assist with individual projects that contribute to the overall program (see page 34).
The program is managed by a National Steering Committee and led by the National Coordinator provided by the Director of National Parks (through the Australian National Botanic Gardens).

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: http://seedpartnership.org.au/about/reports.

The endemic *Ranunculus setaceus*, also known as the simple-leaf buttercup is found flowering in drying pools throughout Tasmania's Central Plateau Conservation Area. (Photo: James Wood, RTBG)

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.

National Steering Committee

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

Split pods and seeds of *Acacia tolmerensis* G.J. Leach in low sandstone outcrops near Tolmer Creek, Litchfield National Park NT. (Photo: Ben Wirf, GBDBG)

Members of the National Steering Committee during 2017–18 were:

- **Dr Elinor Breman** – Program Coordinator, Millennium Seed Bank Partnership, Royal Botanic Gardens, Kew, UK
- **Dr Anne Cochrane** – Committee Member, Australian Network for Plant Conservation at the Threatened Flora Seed Centre, Western Australia (July 2017 - October 2017)
- **Dr Peter Cuneo** – Manager, Seedbank and Restoration Research, PlantBank, Royal Botanic Gardens and Domain Trust, New South Wales
- **Dr Andrew Crawford** – Committee Member, Australian Network for Plant Conservation at the Threatened Flora Seed Centre, Western Australia (October 2017 - June 2018)
- **Mr Dan Duval** – Seed Research Officer, South Australian Seed Conservation Centre, Botanic Gardens and State Herbarium, South Australia
- **Mr Graeme Errington** – Seedbank Curator, PlantBank, Royal Botanic Gardens and Domain Trust, New South Wales
- **Dr Jenny Guerin** – Seed Research Officer, South Australian Seed Conservation Centre, Botanic Gardens and State Herbarium, South Australia
- **Mr Jason Halford** – Senior Botanic Officer and Seed Bank Manager, Brisbane Botanic Gardens, Mt Coot-tha, Queensland
- **Dr Paul Gibson-Roy** – Lead Scientist Eastern Australia, Greening Australia
- **Dr David Merritt** – Senior Research Scientist, Western Australian Seed Technology Centre, Botanic Gardens and Parks Authority, Western Australia
- **Dr Andre Messina** – Botanist, Royal Botanic Gardens Victoria, Victoria
- **Mr Tom North** – Seed Bank Curator, Australian National Botanic Gardens, Australian Capital Territory
- **Mr Luke Sweedman** – Curator, Western Australian Seed Technology Centre, Botanic Gardens and Parks Authority, Western Australia
- **Mr Neville Walsh** – Senior Conservation Botanist, Royal Botanic Gardens Victoria, Victoria
- **Mr James Wood** – Seed Bank Manager, Royal Tasmanian Botanical Gardens, Tasmania
- **Mr Ben Wirf** – Nursery / Seedbank Manager, George Brown Darwin Botanic Gardens, Northern Territory.

The endangered *Acacia wilsonii* is a low spreading, wiry shrub found in the southern parts of the Geralton Sandplains bioregion in Western Australia. (Photo: Andrew Crawford, DBCA)

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.

We look forward to working with our supporters and Associates in the coming years to achieve our vision of a future where Australia's native plant diversity is valued, understood and conserved for the benefit of all.

Supporters

- Millennium Seed Bank Partnership, Royal Botanic Gardens, Kew
- Director of National Parks (Australian Government)
- Garfield Weston Foundation
- Grantham Foundation
- The Crop Trust
- Simon Foundation
- New Zealand Ministry for Primary Industries

Eucalyptus x *stoataptera* is native to Western Australia, growing throughout the Esperance Plains bioregion. Seed secured by our collectors ensures that species like this are represented in our seed banks in the event that future impacts threatened its future. The support of our funders, Associates and volunteers helps us to secure more species for future generations. (Photo: Luke Sweedman, BGPA)

The ripe fruit of *Geijera salicifolia* splitting to reveal seed. (Photo: Gavin Phillips, RBGDT)

Associates

- Atlas of Living Australia
- Australian Government Department of the Environment and Energy
- 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
- Kakadu National Park
- Society for Ecological Restoration Australasia
- University of New England

Volunteers

- Anna Moreing
- Peter Rowed

PARTNER ORGANISATIONS OF THE AUSTRALIAN SEED BANK PARTNERSHIP

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

Australian Network for Plant Conservation Inc. (ANPC)

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 (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 Australia Seed Technology Centre
Botanic Gardens and Parks Authority (BGPA)

Threatened Flora Seed Centre
Department of Biodiversity, Conservation and Attractions, Western Australia (DBCA)

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.