Conservation Snapshot 2026: Global Strategy for Plant Conservation 2024-2030

This report has been prepared by the Australian Seed Bank Partnership to provide a snapshot of the many activities underway in Australia to progress complementary actions under the Global Strategy for Plant Conservation (GSPC) adopted at Convention on Biological Diversity (CBD) COP16 in 2024. GSPC actions align with the Kunming-Montreal Global Biodiversity Framework (KMGBF) targets.

The report draws on case studies of plant conservation, science and practice across government, research and non-government sectors, delivering GSPC actions and supporting the six national biodiversity targets and three enablers in Australia's Strategy for Nature, our National Biodiversity Strategy and Action Plan (NBSAP) under the CBD. A number of the case studies have been included in Australia's. 7th National report to the Convention on Biological Diversity (CBD).

Australia's botanical organisations, the Council of Heads of Australian Botanic Gardens and the Botanic Gardens of Sydney, are representing Australia's interests in global plant conservation, as members of the Global Partnership for Plant Conservation (GPPC). The GPPC is developing a framework for GSPC reporting, policy briefs and a communication strategy for the GSPC.

A Plant Specialist Group has also been established under the IUCN to advise Australian governments and non-state conservation partners about plant conservation priorities. The Australia Plant Specialist Group (APSG) is collaborating across institutions and sectors to provide science-based support, particularly supporting assessments of extinction risk for Australia's flora. The APSG will be engaging with Australian governments about strategy for threatened species listings and conducting outreach with native plant research and practitioner communities to communicate what data is needed to inform threatened species extinction risk assessments, particularly ecological field data.

Note for international readers:

The term '*Australian Governments'* means all governments, the Commonwealth (national) and eight state and territory (sub-national) governments - the Australian Capital Territory (ACT), New South Wales (NSW), Northern Territory (NT) Queensland (QLD) South Australia (SA) Tasmania (Tas) Victoria (Vic) and Western Australia (WA).

Under Australia's constitution, the 'states and territories' our sub-national governments, have primary responsibility for plant and biodiversity conservation, excepting Matter(s) of National Environmental Significance (MNES), where national law applies to protect these matters. Protected matters include: nationally listed threatened plant species and ecological communities, World and National Heritage places, Ramsar sites, and Commonwealth marine areas.

The acronym 'IPA' refers to Indigenous Protected Areas in Australia. To respect this First Nations program, and avoid confusion, the term Important Plant Areas in the GSPC will be spelt in full and/or referred to as, 'areas important for plant biodiversity'.

KMGBF Targets, NBSAP Targets and Enablers and GSPC Complementary actions
KMGBF Objective 1. Reduce threats to biodiversity
TARGET 2: Restore 30% of all Degraded Ecosystems
NBSAP Target: Priority degraded areas are under effective restoration by 2030
GSPC Action 2. Ecological restoration Implement ..programmes for the effective restoration of degraded ecosystems and habitats, including ...prioritizing the use of genetically appropriate material of native species..."
One of the most significant advances to ensure 'effective' restoration and resilient ecological recovery is the application of genomic science early in the planning process for restoration of plant communities and ecosystems. Genetic research programs are based at the Botanic Gardens in Sydney and Victoria, Western Australia's Conservation Genetics Laboratory and the Brisbane Herbarium in QLD. These programs, focused on plant diversity conservation, are supporting community-based restoration and recovery planning and practice, as well as public conservation land management. New web-based tools are allowing restoration practitioners to access climate adjusted and genetically informed provenance data guiding ex situ and in situ recovery actions to support effective ecosystem restoration. **Case study: Genetic Rescue of the 'Big Scrub'** Only 1% of the Critically Endangered Lowland rainforest of subtropical Australia remains in 80 isolated pockets in a fragmented landscape from north coast of NSW to the Fraser coast in QLD. Over 30 years Big Scrub Landcare planted over 3 million rainforest trees. With the seed all coming from the same trees, the reproductive and adaptive potential of these plantings is limited. Evidence-driven restoration of 600 ha of rainforest is being enabled by a collaboration with geneticists at the Botanic Gardens of Sydney (BGoS). The focus is to improv genetic diversity for 60 rainforest species, 30 threatened plants and 30 structural canopy trees. Canopy trees providing critical micro-climate and habitats and adaptive functions for threats. Analysis of DNA extracted from 10,000 leaf samples across full distribution range for 32 of the 60 species, has identified the genetic neighbourhood' for each species and the best trees to capture 90% of genetic diversity (noting sampling of remaining species is underway). Sampling guidelines have been developed to guide propagule collection from those trees and the best material (cuttings; seed; wildings). The BGoS Field collection app is used to record data about collection location, site conditions and aspect. This data stays with the propagule from parent tree to nursery to planting position in a living plantation. Firewheel rainforest nursery is growing on cuttings for the plantation with geneticists guiding the design of species blocks to maximise cross-pollination. **Case study: National research providing pathways and priorities for effective restoration** The research Hubs of the Australian Government's National Environmental Science Program (NESP) are delivering multiple research and practice projects to support effective restoration. For terrestrial ecosystems, the Restoration by design project is assembling an evidence base about effective strategies to improve biodiversity outcomes in restoration programs. Stakeholder workshops have helped align priorities and methods, examine methods for monitoring and evaluation, and review biodiversity outcomes of past restoration projects in NSW. Advice on revising planning instruments and guidelines will be developed and knowledge transfer supported across the restoration sector. A roadmap for landscape-scale coastal and marine ecosystem restoration has identified gaps and developed information and tools to support restoration. This includes models to inform which actions to take and under what circumstances and a method for systematically prioritising restoration. Developing genuine partnerships with Traditional Custodians to build capacity was also identified. The roadmap is supported by

research about policy and legislative barriers to restoration and how to lower project risks for coastal and marine restoration projects.

Case Study: Private landholders drive restoration in global biodiversity hotspot
In the heart of Western Australia's Gondwana Link ecological pathway (Fitz-Stirling section), private landholders have been transforming cleared farmland into a thriving haven for native species. The first buyers within the Gondwana Link landscape in 2002, acquired both Chingarrup Sanctuary and Mondurup View for restoration. Most of Chingarrup Sanctuary had been degraded by clearing, leaving just 100 hectares of regrowth. With the support of Bush Heritage Australia, Greening Australia and Shell Reconnections, and community landcare volunteers, around 90 hectares was revegetated in the early 2000's. Seeds from 50 different native species—mainly Acacias, Melaleucas, Eucalypts, Sheoaks, Callistemons and Calothamnus—were sown, with an extraordinary 95 per cent survival rate. Flora and fauna surveys have recorded significant plant diversity: 670 native flora species in the Sanctuary. The return of rare orchids was unexpected, with 6 native orchid species observed in revegetation areas just 17-21 years after planting—far sooner than the 40-50 years predicted by experts for the Great Southern Wheatbelt. A highlight is the discovery of Cyanicula aperta (Western Tiny Blue Orchid) in 2022 and 2023, where no seed was sown, as well as significant numbers of five other orchid species found in spring 2025, including Caladenia barbarossa (Common Dragon Orchid), Caladenia doutchiae (Purple-veined Spider Orchid), Caladenia falcata (Fringed Mantis Orchid), Pterostylis picta (Painted Rufous Greenhood) and Pterostylis perculta (Ruddy Greenhood). By restoring plant habitat and ecological function in one of Western Australia's most important areas for plant diversity, the restoration of Chingarrup Sanctuary also supports complementary Action 3.

Case study: Seagrass restoration lending a hand to support critically endangered fish
The University of Tasmania is establishing a temperate seagrass restoration facility to develop and trial innovative methods for seagrass seed collection, storage, propagation, and restoration. Initial trials will use the closely related Zostera muelleri as a proof-of-concept before scaling up to Heterozostera nigricaulis ahead of its flowering season. This initiative is addressing habitat loss and degradation, particularly the decline of seagrass meadows (Heterozostera nigricaulis), which are major threats to survival of the critically endangered red handfish (Thymichthys politus) which is now restricted to a single location, with an estimated population of only 100 individuals. Conservation efforts to date focused on urchin removals, however active seagrass restoration is now proposed as a complementary strategy to enhance and expand these critical aquatic habitats. Related projects are transplanting seaweed-bearing boulders to the deeper sand edge and adjacent barrens. This intervention will enhance the critical interface ecotone between reefs and seagrass habitats strengthening ecosystem resilience.

Case study: Applying 20 years of learning to expand saltmarsh restoration across NSW
The UNSW Water Research Laboratory is a leader in estuarine restoration, helping to restore 1000's of hectares of coastal wetlands with a unique approach using nature-based technology and environmental engineering. Working with local collaborators, including NSW National Parks and Fisheries, the team invented 'smart gates' linking floodplains to the estuaries. Tidal waters from estuaries restore saltmarsh ecosystems on the coastal floodplains, reducing flooding, providing fish nurseries and habitat for migratory shorebirds. This knowledge and experience in coastal restoration is being transferred to Oceania, working with local experts at the University of the South Pacific (USP). Project Halo, will identify similar low-lying sites across Oceania, where tidal restoration can regenerate mangrove ecosystems, and is also bringing mangroves back on 'floating' wetlands into urbanised areas, such as ports or marinas. Research students are equally based in Suva and based in Sydney and can graduate from both institutions. With additional support from UNSW, the project has been given resources to hold workshops for schools and businesses, showing scale models of mangrove habitats and their restorative effects for marine environments while encouraging community engagement.

TARGET 3: Conserve 30% of Land, Waters and Seas

NBSAP Target: Protect and conserve 30% of Australia's landmass and 30% of Australia's marine areas by 2030.

GSPC Action 3. Important areas for plant diversity

a) Important Plant Areas identified, connected and protected
b) Integrated management plans developed for Important Plant areas

Australia 's terrestrial protected area estate, and marine protected areas capture many 'important areas for plant diversity'. Indigenous Protected Areas (IPA), are particularly important for protected and connecting terrestrial plant diversity in northern and central Australia, and sea Country marine plant communities around the entire coastline.

Case study: Protecting regionally important plant communities, Gurruwiling IPA

The Gurruwiling IPA covers 1.3 million hectares of land and sea Country including Gurruwiling (Arafura Swamp) in northeast Arnhem Land, the largest freshwater ecosystem in Northern Australia and largest contiguous paperbark swamp in Australia. It features a mosaic of 25 distinct plant communities, dominated by paperbark forests, woodlands over grassland and floating mat communities. Key plant communities include *Hanguana malayana* swamp, a restricted freshwater wetland community in the southern part of the Arafura Swamp associated with permanently flooded areas and the largest area of this community in the NT. The distinctive large wetland palm Corypha utan is a restricted range species found only in the wetland. The swamp supports over 100 species of grasses, herbs, sedges, and aquatic plants and over 3000 hectares of complex monsoon rainforest supporting large suite of rare and or threatened plants. These plant communities have been protected by and benefitted from Aboriginal care and management over millennia by the Yolŋu, Bininj and Rembarrnga peoples. Collaboration between the Traditional owners and Bush Heritage Australia has been foundational to creation of the IPA, and work to develop the Healthy Country Plan 2025-2035 for its management.

Case study: National heritage listing protects our nationally significant botanical sites

Many of Australia's most important areas for plant diversity are recognised and protected as National Heritage listed Places (NHL) under the EPBC Act. 21 NHL places are listed for their outstanding botanical values- diversity, endemic and rare flora and unique adaptations. These include iconic sites: the Stirling Range in WA; Gariwerd in Victoria; Royal, Ku-ring-gai, the Blue Mountains and Warrumbungle National Parks in NSW, the QLD Wet Tropics and Gondwana rainforests in NSW and QLD. The 2024 listing of Watarrka National Park in the NT, is of particular significance, elevating conservation of regionally endemic and rare arid plants and their communities. The listing recognises the unusual diversity of plants (691 species) including locally endemic and relict plants and communities, geographically disjunct populations, refugia for flora (and fauna), rare and threatened plants and plants that are poorly known.

Case study: OECMs tool for connecting and protecting important plant areas

Australia's OECM Framework recognises land-based conserved areas outside of protected areas and presents exciting opportunities to protect 'important areas for plant diversity'. A pilot project underway in South Australia is surveying flora across the predicted distribution of the Swamps of the Fleurieu Peninsula TEC to identify the important plant areas to reconnect fragmented plant habitats and guide conservation action by private landholders, who manage 90% of remaining swamps. A contextual understanding of the ecology and social setting is key to selecting the best type of protection for these areas and to guide management plans. NESP research in Tasmania used tree cover loss and gain to assess the strengths and effectiveness of different types of protected areas for biodiversity conservation, which included multiple use areas and programs. Further, research involving the Trust for Nature in Victoria is developing methods to assess individual and program level impacts of private protected areas.

TARGET 4: Halt Species Extinction, Protect Genetic Diversity, … conflicts

NBSAP Target: No new extinctions

GSPC Action 4. Plant species conservation

a) Conservation risk and status known, understand, maintained
b) Develop and implement recovery plans
c) Promote programmes for in situ and ex situ conservation

Conservation of genetic diversity

d) In situ and ex situ crop wild relative conservation
e) Crop wild relatives effectively protected, restored and managed
f) Ex situ operations producing artificially propagated threatened plants

4a. Conservation risk and status known, understand, maintained

The 2021 State of Environment report identifies habitat destruction as causing population declines for threatened plant species. Further declining species and those at most risk of extinction are concentrated in highly modified agricultural and urban landscapes and changed fire regimes are also a significant threat. The assessment and listing of Australia's threatened flora are carried out under Australia's national biodiversity legislation, the *Environment Protection and Biodiversity Conservation* (EPBC) Act. As of November 2026, plants made up more than two-thirds of nationally listed threatened species with 1522 species listed as threatened and over 100 listed threatened ecological communities. About 100 flora species and 12 Ecological communities are currently being assessed for threat status and potential listing.

Case study: New national regulatory tool to tackle wildfire impacts on plant diversity

In response to the ecological impacts of the 2019-20 megafires, the Australian Government prioritised research to underpin national listing of 'Fire regimes that cause declines in biodiversity' as a key threatening process (KTP) under the EPBC Act. These fire regimes their landscape patterns and interactions with other processes threaten more than 800 species and 65 ecological communities listed as nationally threatened. Key threats identified for plants are disruption to life cycles causing population declines, for both obligate-seedling and resprouters, effects on pollinators, as well as invertebrates with larval stages or adults dependent on plant resources. For orchids the potential suppression of Mycorrhizal fungi from smoke- and charcoal chemical products generated by fire is possible. The advice further notes, predation, post-fire, disease and competition amplify the threats to plants. These complex dependencies and biotic interactions, combined with abiotic processes, like pre- and post-fire drought, present significant challenges for plant recovery and resilience. The KTP notes many plant species and ecological communities not listed as 'threatened' are also likely eligible for listing due to fire-related processes described in the Key Threatening Process advice. Since publication of the KTP, a study applying the IUCN Red List assessments, found at least 88 additional plant taxa may be eligible for listing as threatened and a further 18 taxa previously listed as threatened on the *EPBC Act* are at greater risk of extinction and require a status upgrade (see Le Breton et al, 2025).

Case study: National research delivers new knowledge about our most threatened plants

The NESP Threatened Species Recovery (TSR) Hub conducted critical research on status of threatened and at-risk plants, as well as assisting with science advice for post bushfire recovery in 2020-21. A large evidence base for more than 750 plants, listed as critically endangered or endangered was assembled by the research team, with 50 of these plants identified at greatest risk of extinction, due to severe continuing decline. The Action plan for Australia's imperilled plants identifies critical information gaps needed for flora conservation status assessments and management. The plan identifies common management actions for these species covering: preventing further loss of species' habitat; managing threats of disease, fire and grazing; and, regularly monitoring populations to understand response to threats and management actions. This baseline data allows the trajectory of these flora species to tracked, and designing programs to implement the Plan.

4. b) Develop and implement recovery plans
Australia's key research institutions have been conducting critical post-fire studies to track recovery of nationally listed ecological communities that can inform future actions, building on the evidence base that supports the KTP Fire regimes that cause declines in biodiversity.

Case study: Uncovering fire recovery and response of affected plant communities
Paroissien et al. 2025, examined severity, recovery and changes in plant structure and composition threatened forest communities. For threatened wet sclerophyll forests, extreme fire severity in mesic forests (contain both dry sclerophyll and rainforest elements), led to reduced plant diversity across strata, in the short term. Distinct compositional difference between recently burnt and long unburnt sites indicates recovery may be slow and more severely burnt areas may take longer to recover. A large study involving over 100 scientists looked at impacts for both plants and animals. The largest effects on plant and animal taxa were in areas with frequent or recent past fires and within extensively burnt areas. Even where bushfire was not as severe, declines of plants and animals can be catastrophic, if those habitats have been burnt three or more times over 40 years, or within ten of the preceding years. Some plants such as grasses also become increasingly abundant after each successive fire, with resource benefits for animals. An important finding was that severe bushfire impacts can be moderated if there is significant unburnt habitat within 2.5 kilometres of the impacted area. This allows plant seeds and animals to move from unburnt to burnt habitats, helping damaged areas to recover. Rather than burning these to prevent flare-ups, these unburnt patches need to be protected after fire, to facilitate recovery of plant communities and wildlife (See Driscoll et al 2024).

Case study: New fire ecology database links plant trait data with species responses to fire
Understanding plant traits is useful for predicting how fire regimes affect plant populations and communities and informing fire management strategies for recovery, particularly where changed fire regimes lead to declines. A ground-breaking Fire Ecology database allows these traits to be interpreted in their ecological context. This comprehensive resource improves understanding of the ecological impacts of fire on plant communities. It shows how species as a whole respond to fire events, including changes in population size and structure, and community properties following fire events. Field data from surveys conducted in humid coastal and tableland areas of eastern NSW between 2020 and 2022, sampled contrasting ecosystem types (three major types of rainforests, wet and dry eucalypt forests, heathlands, temperate and alpine peatlands) burnt during 2019/2020. Trait values documented from existing sources-scientific literature, reports or unpublished sources were also included to provide a baseline of trait values for species under-represented in field surveys. Combining observational and legacy data, the database contains records for at least one fire-related trait for 5,573 native plant species in NSW. Seven modules provide information for: species taxonomy, references to data sources, species-level traits from existing sources, field observations on population and species traits, fire event characteristics, sampling event, and derived traits from field observations/samples. The database can be adapted as trait concepts and methods evolve. Linking trait data with species responses to fire, helps inform strategies for ecological and recovery needs of different species and communities. The model is also applicable globally for plant research and fire management needs

4. c) Promote programs for in situ and ex situ conservation
The Australian Seed Bank Partnership (ASBP) is a national collaboration of Australia's leading botanic gardens, biodiversity agencies and plant conservation non-government organisations. The ASBP to delivers a national program of work focussed on ex situ plant conservation through s ten conservation seedbanks in the network. As of November 2025, there were over 61,000 accessions stored in seed banks throughout Australia, capturing around 13,000 plant species. A total of 974, or 65 per cent, of our nationally listed threatened flora species are represented in Australia's ex situ conservation seed banks.

Case study: Ex situ plant conservation supporting Threatened Species Action Plan (TSAP)
The ASBP and Partners are supporting implementation of the Australian Government's TSAP for priority plants and places. Funded by the Saving Native Species program (SNS), these include: Conservation actions to recover Priority (plant) species by:

- securing insurance collections for 10 Priority plants in Vic, SA and WA;
- preventing the extinction of the Lax Leek-Orchid in SA;
- improving the trajectory of Acacia peuce at Akerre in the NT; and
- securing the Wollemi Pine in NSW.

Emergency actions for threatened plant species, involving:

- securing habitat and ex situ populations for 5 endangered orchids in WA;
- saving Tuggeranong Lignum (Muehlenbeckia Tuggeranong) in the ACT, and
- rescue of 8 rainforest species in QLD from myrtle rust impacts.

Additionally, the Australian Network for Plant Conservation (ANPC) is coordinating recovery actions for high-priority myrtle rust affected sp. and, nine city Botanic Gardens are participating in technology trials, as part of an airborne myrtle rust monitoring and surveillance network. The National Seed Bank is providing technical advice for seed collection for an ambitious revegetation project for the Norfolk Island Group Priority place. Most threatened species on Norfolk are plants, many endemics. More than 41,000 seeds have been collected from more than 60 species and over 13,000 plants propagated by Parks Australia and partners. Weeds have been cleared across 11 hectares to reinstate plant communities- moist palm valley forest and upland hardwood forests. (See: TSAP 2025 progress-report)

Case study: New toolkit to support management of valuable Living Collections
Australia's Botanic gardens provide valuable scientific and horticultural resources to study and conserve threatened plants through their living plant collections. Living collections can support ex situ threatened plant species conservation (and other global threatened flora) and provide plant materials for research and ecological restoration. Regional Gardens are increasingly growing their living collections of native plants and collaborating on threatened plant conservation projects both in their regions, by establishing seed orchards and growing plants for translocation back into the wild and, participating in national meta collection projects for vulnerable flora. Botanic Gardens Australia and New Zealand (BGANZ) have developed the Living Collections Toolkit to assist botanic gardens develop and implement a formal plan for their plant collections, including conservation collections. The Toolkit can be used for gardens of all sizes and at all stages, from small regional gardens with limited staff through to major capital city gardens and those being newly established. While the Toolkit is aimed at botanic gardens without a Living Collections Plan, it is also a valuable checklist or reminder for gardens that have well established collection planning documentation and processes.

Case study: Survive and thrive – ex situ lifeline to fire vulnerable alpine plants
During the summer of 2019/20, after years of drought and months of high temperatures, bushfires impacted extensive areas of southeastern Australia. In the ACT, over 80% of Namadgi National Park burnt over 40 days, impacting alpine, sub-alpine and montane bushland. The subalpine is an important, species rich transition zone between montane regions below and alpine above. It features low-growing woodlands with a diverse understory of shrubs, grasses and herbs that are adapted to cool, wet conditions. These slow-growing systems are vulnerable to changes in climate, including increased fire frequency and severity. In 2022 the National Seed Bank's *Survive and Thrive* project identified 12 fire-affected subalpine species requiring urgent *ex situ* conservation action. The NSB worked collaboratively with the Conservation Horticulture team of ANBG and the ACT government to collect, study and ultimately secure these species. Over 220,000 seeds were collected from Namadgi National Park over multiple collecting trips with seeds of all 12 target species safely secured in the National Seed Bank. Germination protocols were developed for five species, and more research is needed to uncover optimal treatments and temperatures for the remaining seven species. Importantly, one of the fire affected target species, the Dwarf Violet, *Viola improcera,* has now been listed as Endangered

under the EPBC Act (1999), affording it legal protection and focus for recovery. Research findings have been presented at the national and international seed science conferences held in Australia in 2025 and will be published. Knowledge generated in the project is being used to support conservation actions *in situ*, helping build a more resilient future for subalpine flora.

Case study: Ex situ conservation is yielding big results for declining wild plants
The Australian Seed Bank Partnership has delivered several high impact projects focused on our most threatened plants. The donor funded Grass Roots Giving project is securing the future of the Critically Endangered Midland Greenhood Orchid (*Pterostylis commutata*). Surveys conducted as part of the project, uncovered three new sub-populations, boosting the known population from 50 plants to 183 individuals in the Tasmanian Midlands. Orchids were caged at the primary site to protect from grazing and hand-pollinated to maximise seed production, resulting in over 180,000 seeds collected and banked at the Tasmanian Seed Conservation Centre. Scientists also successfully isolated six strains of symbiotic fungi and achieved the first germination trials for the species, vital for its recovery. The Critically Endangered Project funded by Royal Botanic Gardens, Kew secured and protected some of Australia's most at-risk plants targeting 10 Critically Endangered species for seed collection in Western Australia and Tasmania. ASBP Partners exceeded the target, banking seed of 22 listed species including 16 Critically Endangered and six other Threatened species. Other highlights were novel experimentation with new orchid germination media using alternate cereals as carbon sources for the mycorrhizal fungi, improving seedling growth and survival rates of the Golfers leek orchid (*Prasophyllum incorrectum*) and, successful translocation of 61 seedlings of *Grevillea batrachioides* known only from a single location with less than twenty wild plants in midwest Western Australia.

Case Study: Plants on the edge – ex situ conservation of an ancient Eucalypt
The Mongarlowe Mallee, *Eucalyptus recurva*. is one of Australia's oldest known tree species, with one plant estimated to be over 3000 years old. Listed as Critically Endangered, this ancient species was first discovered by western scientists in 1985. This eucalypt was once widespread across NSW, but now only six known individuals remain. These trees are scattered over 30km on private land and flower at different times, making natural pollination nearly impossible. With almost no natural reproduction and a tiny population, genetic diversity is extremely limited putting the species at serious risk of extinction. Since 2020, the Australian National Botanic Gardens has been supporting the NSW Government's Saving our Species program to save this living fossil from extinction. Four of the six known lineages have been grafted, and the Garden's conservation horticulturalists are working to graft the final two. The collaboration is aiming to collect pollen and through controlled pollination, produce pure Eucalyptus recurva seed.

4. d) In situ and ex situ crop wild relative conservation
e) Crop wild relatives effectively protected, restored and managed
Australia's stock of wild plants related to important food crops is rich in diversity, including potentially valuable cousins of banana, eggplant, melon, mung bean, pigeon pea, rice, sorghum, sweet potato, soybean and yam. Ex situ conservation of these major food crop wild relatives is critical to avoid their loss in the wild and, enable research on traits to help food security and sustainable production. Australia's national genebanks store a range of seeds for wild crop species, as well as distributing seeds to other countries to assist with research and breeding.

The **Australian Grains Genebank** (AGG) maintains accessions of crop species, their progenitors and wild relatives under long-term conservation conditions. The AGG has genotyped the major crop groups (around 75% of the entire collection) and made the genomic data freely available under a Creative Commons by 4.0 license through DataVerse. The AGG currently holds almost 217,000 accessions of temperate and tropical grain crops, their progenitors, landraces, breeding material and wild relatives. These collections are represented by 152 genera of 918 species, sourced from more than 150 countries. Crop wild relatives comprise 5 per cent of the

total AGG collection, with much of the tropical crop wild relatives collected from northern Australia and unique to the AGG. As of 2025, the AGG has duplicated 27,152 accessions at the Svalbard Global Seed Vault in Norway.

The **Australia Pastures Genebank** (APG) is Australia's first national pasture and forage genetic resource centre working to conserve the diversity of pasture and forage species domestically and internationally of value to Australian agriculture. This includes plants grown for livestock, crop rotation and the environment. The APG currently holds 85,448 accessions of wild material represented by 462 genera with 2921 taxa of 2623 species of temperate and tropical pastures and forages from 178 countries. The conservation value of the germplasm held in the APG is high with more than 90 per cent of the germplasm stored being unique to the APG. As of 2025, the APG has duplicated 40,171 accessions at the Svalbard Global Seed Vault in Norway.

4. d) Ex situ operations producing artificially propagated threatened plants
Case study: Seed production provides a lifeline for the Small Purple Pea
Swainsona recta (Small Purple Pea) is listed as Endangered under the EPBC Act. It is associated with the critically endangered Box Gum Grassy Woodland Ecological Community, an ecosystem threatened by urban development, agriculture, invasive species, overgrazing and changing fire regimes. Once widespread across southeastern Australia, *S. recta* is now extinct in Victoria and restricted to 28 small sites in NSW and the ACT. The Australian National Botanic Gardens (ANBG) has been working with ACT Government to protect local populations of *S. recta*. Using seed collected from wild ACT populations, a Seed Production Area (SPA) developed at the Gardens provides an ongoing source of seed. The most genetically diverse seeds produced have been stored in the National Seed Bank. In 2022 the partnership initiated a multi-year trial of translocations back into the wild in the ACT. Using seed from the SPA, the ANBG nursery grew 1000 plants to be reintroduced across 4 sites between 2023 and 2026. The goal is to create self-sustaining wild populations by boosting plant numbers and reproduction in the wild, and resilience through increased genetic diversity. Future research will focus on improving germination strategies, and genetic studies of the wild population. This work will be assisted by the exciting discovery of new purple pea population by ACT Park Rangers in October 2025. This is just the 6th surviving naturally occurring population to be found in the ACT and one of the largest. While most populations have fewer than 10 plants, this population has an estimated 40-50 individuals providing new material for the genetic research.

Case study: Deploying ex situ and in situ actions to secure threatened plant recovery
A project to prevent extinction of Victoria's threatened flora is long-term conservation benefits using onsite (*in situ*) and offsite (*ex situ)* actions. The project is focusing on 24 endangered or critically endangered Victorian plants across two botanical hotspots, the Gippsland and Grampians regions, as well as threatened flora from the Barwon Southwest and Port Phillip Regions. The project is implementing key threatened species recovery actions from 11 Threatened species Action Statements and 11 National Recovery Plans and is working to optimise conservation actions across the life cycles of the plants. Ex situ actions involve collecting seeds, vegetative plant material, spores, rhizobia and mycorrhiza which are being held in seed and spore banks, nursery facilities, and raised garden beds at the Royal Botanic Gardens Victoria (RBGV). These ex situ plant collections will act as long-term insurance populations, as a source of material for future reintroductions, and assist further research. The impact of this work is demonstrated for one of the Critically Endangered species, *Sphaerolobium acanthos*, (Grampians Globe-pea) endemic to Gariwerd National Park. RBGV scientists and horticulturists have studied the genetic diversity of the species, identified its pollinators, collected seeds across the remaining populations, and now grown >400 plants with their rhizobia (nitrogen-fixing root-nodule bacteria) ready for translocation back into Gariwerd in 2026. The project runs over 3 years to 2026 and is a collaboration led by the RBGV with La Trobe University, the Australian Network for Plant Conservation (ANPC) and ten other agency and community partners

Case study: Homecoming seed 'raised' new hope for endangered shrub

The Woods Well Spyridium (*Spyridium fontis-woodii*) is a plant found only in a small area of South Australia. Recognising the importance of this unique species back in 2006, the South Australian Seed Conservation Centre (SASSC) collected 1,200 seeds from over 30 plants, ensuring a broad genetic representation for *ex situ* conservation. These seeds were sent to the Millenium Seed Bank in the UK for safekeeping against future threats. In 2021 the Woods Well Spyridium was listed as critically endangered and became one of the 30 priority plants in the Threatened Species Action Plan in 2023. The wild population had dwindled to fewer than ten plants, reducing the opportunity to collect from a diverse gene pool. The foresight of the SASSC meant 200 seeds were able to be repatriated from the UK. As part of the ASBP's Securing the future project a wholistic seed collection-plant propagation-to-translocation project is being delivered by the SASSC in collaboration with First Nation rangers. From the repatriated seeds, 500 Woods Well Spyridium seedlings have been grown,100 thriving in a dedicated seed production orchard at the Adelaide Botanic Garden, and 400 cared for by First Nations horticulturists at Raukkan Nursery.180 of the young plants have been translocated in 2025 into Messent Conservation Park.

TARGET 6: Reduce the Introduction of Invasive Species by 50% and Minimize Their Impact

NBSAP Target: Eradicate or control invasive species in priority landscapes and further minimise their introduction by 2030

GSPC Action 6.

Monitoring invasive species

a) Develop or strengthen early warning and monitoring and tracking systems,

Controlling invasive species

b) Address detrimental impacts of alien species

Case study: New tools help tackle invasive pasture weeds at landscape scale in the North.

Many invasive grasses are now widespread, posing a significant risk and management challenge. The NESP Supporting the strategic management of invasive grasses project is focused on gamba grass, para grass and olive hymenachne, building on decades of research in Northern Australia. The project provides information to managers of protected areas and Indigenous ranger groups to support strategic management and reduce biodiversity impacts of invasive grasses. This includes the co-development of user-friendly mapping, monitoring and decision-support tools. A prototype mobile application was developed with the Terrestrial Ecosystem Research Network (TERN) to enable aerial mapping of gamba grass and other weeds at a landscape scale. The app helps weed managers visualise gamba grass distribution, examine landscape-scale patterns of gamba spread, identify priority areas for control, and monitor and report. On-ground and helicopter testing was conducted in Litchfield National Park, before presenting the app to weed managers from NT and QLD land management organisations. The app is being released as a national Ecological Monitoring System Australia (EMSA) protocol. NESP researchers also contributed to the *National best practice management manual for gamba grass,* funded by the Australian Government's Established Pest Animals and Weeds Management Pipeline Program

Case Study: Stop the Rot – tackling the spread and impact of Phytophthora.

The genus Phytophthora includes plant pathogens that threaten agriculture, horticulture, urban forests, and conservation efforts in natural ecosystems. While over 200 species are globally described, only 91 have been reported in Australia, a significant biosecurity risk from overseas incursions. Urban forests, including botanic gardens, are increasingly recognized as reservoirs of Phytophthora diversity, serving as "bridgeheads" for pathogen introduction into natural ecosystems. The Botanic Gardens of Sydney (BGoS) launched the Stop the Rot Project' (STRP) to respond to tree establishment failures linked to Phytophthora. A survey of tree nursery stock (2021–2023) revealed a 22% positive rate for Phytophthora and identified other threats to species diversity, including the first Australian reports of P. mediterranea (a biosecurity threat). A concurrent survey at the Blue Mountains Botanic Garden reported P. plurivora on Rhododendron for the first time in Australia. This species has subsequently been associated with dieback of the

endangered Dwarf Mountain Pine (Pherosphaera fitzgeraldii) within the Greater Blue Mountains World Heritage Area. This highlights the value of biosecurity monitoring in botanic gardens to provide sentinel information and prevent the introduction of Phytophthora into natural ecosystems. STRP is now focused on developing an innovative and cost-effective batch leachate system for Phytophthora detection in plants, soil and water for nurseries, national parks and botanic gardens. This will inform strategies to mitigate the spread and impact of Phytophthora.

Case study: Genetics assisting restoration of Myrtle rust affected foundation species
The disease myrtle rust, caused by *Austropuccinia psidii*, infects immature tissue from Myrtaceae hosts, including the ecosystem foundation species, *Melaleuca quinquenervia*. This species occurs in freshwater and estuarine wetlands along the east coast of Australia and is also widely used in urban parklands and street tree planting. Future landscape applications and wetland restoration using this species would ideally draw on disease resistant and genetically diverse individuals. Doctoral research supported by the Botanic Gardens of Sydney, and the University of Sydney has developed a molecular assay to identify and select resistant individuals and seed lots for restoration (see Karina Guo et al.). Genomic prediction of disease resistance provides a path to marker assisted restoration for a wetland foundation tree species. The study has proceeded to test the molecular assay through large restoration plantings in collaboration with on-ground restoration practitioners. Additional experiments and analyses have addressed the impacts of drought on disease resistance, and the process of natural selection for resistance in *Melaleuca quinquenervia* populations. The project is developing and validate ways to combat impacts of myrtle rust, spanning across multiple fields of science, from genomics to applied restoration, to bridge the gap between resistance research and restoration action.

TARGET 8: Minimize the Impacts of Climate Change on Biodiversity and Build Resilience

NBSAP Target: Minimise the impact of climate change on biodiversity

GSPC Action 8. Plant use in climate mitigation adaptation

a) Consider current and projected impacts of climate change
b) Encourage use of genetically, biologically and ecologically appropriate native plant species

Australia's Botanic Gardens were the key drivers of the global Climate Alliance for Botanic Gardens. Adaptation to climate change is critical with predictions that 20-50% of current plant species in botanic gardens and urban landscapes will likely experience temperatures those species have never experienced before in the next 50 years.

Case study: Demonstrating landscapes that can thrive in a changing climate
The Australian Drylands Garden demonstrates leadership in climate adaptation, landscape succession and contemporary design by rejuvenating an under-utilised area (approx. 3200sqm) of Royal Botanic Gardens Victoria Melbourne Gardens to showcase what a future sustainable landscape may look like. The heritage connection to native flora for the previously named 'Australian Bed' was maintained but redefined to focus on native plants which have evolved in hot and dry climates. This required collaboration across state borders and collecting trips to source species entirely new to Melbourne Gardens, and in some cases cultivation in general. The reimagining of the site involved extensive internal and external collaboration, from the design of the new pathway, the storytelling and teaching potential of the Fire and Palm nodes, to the assessment of existing trees and the creation of expansive new planting opportunities.
A detailed interpretation program was developed, pulling together the many story threads that make up this endeavour. This redevelopment exemplifies the courage necessary to face climate change – combining scientific research and Indigenous insight to create an environment designed to be wondrous and still thriving in the climate of 50 years' time. The Australian Drylands provides a living demonstration and real-world adaptation in a changing climate.

Case Study: cutting edge climate adaptation research and conservation in the Wet Tropics
The mountaintop ecosystems of Far North Queensland are globally unique, with many species found nowhere else on Earth, including over 70 vulnerable, endemic plant species. However,

climate modelling predicts these 'cloud forests' will face significant habitat loss due to increasing temperatures, longer droughts, and reduced rainfall. Led by the Australian Tropical Herbarium and funded by the Ian Potter Foundation, the Tropical Mountaintop Plant Science Project (TroMPS) is a collaboration between Botanic Gardens, plant research institutions and conservation seed banks. The project aims to conserve tropical mountain biodiversity through:
1. Securing a network of ex-situ collections for climate-threatened species.
2. Optimising seed banking methods, including storage and germination requirements.
3. Mapping genetic diversity to inform ex-situ strategies and climate resilience.
4. Understanding physiological tolerances of target species to extreme climate conditions.
5. Raising public awareness of the impacts of climate change on tropical mountain biodiversity and the role of Botanic Gardens seed research and living collections in conservation.
As part of TrOMPS, a unique cross agency collaboration in Victoria has developed the 'Cloud Forest Gardens' at the Dandenong Ranges Botanic Garden, using wild-collected species from Queensland's Wet Tropics. These gardens form part of a national 'meta-collection' designed to safeguard at-risk flora while offering unique public engagement and research opportunities.

Case Study: Living Collections Climate Change Resilience Strategy
The Botanic Gardens of Sydney has worked with leading botanic gardens consultants and climate change experts to develop a comprehensive Living Collections Climate Change Resilience Strategy, ensuring the sustainability and resilience of its living collections for decades to come. This pivotal initiative addresses the critical need for adaptation and planning across the three botanic gardens, The Domain, and the germplasm collections held within the Australian PlantBank. With a focus on recognising the importance of conservation horticulture and the botanical sciences, the strategy incorporates innovative practices and targeted recommendations for implementing climate resilience approaches to the curation of the living collections. By identifying species not known to be suited to future climates, as well as vulnerable facilities and landscapes across the organisation, the Gardens aims to mitigate the impacts of climate change across its horticultural and conservation operations. An integral component of this strategy is the prioritisation of climate-adaptive plantings and succession planning, as well as critical infrastructure improvements to prioritise the long-term health and resilience of both native and exotic species across the gardens. The Climate Change Resilience Strategy will serve as a crucial guide for the curation and management of the living collections, ensuring that these natural assets continue to thrive for future generations. This work not only strengthens the resilience of the individual gardens but also demonstrates a practical pathway to implement plant conservation and climate adaptation under the GSPC.

Case study: Creating space for climate resilience at Kings Park and Botanic Garden
Perth had one of its warmest and driest summers on record in 2023, impacting natural ecosystems, urban trees, public parklands and private gardens. The Western Australian Botanic Garden identified the need to adapt and develop climate- and landscape-resilient collections as a key priority. A variety of new and existing spaces within Kings Park and Botanic Garden are evolving into trial beds of resilient landscapes, offering opportunities to grow and assess plant species for their climate and landscape suitability and display their potential. While most seed and cutting material brought to Kings Park as part of field collecting programs is stored for conservation and research purposes, a portion of this material can be propagated for such trials. As part of a reconnaissance trip to the Wheatbelt region in 2023, seed collectors targeted potentially 'resilient' non-listed species and plant species or genera poorly represented in existing collections. They scoured the granite outcrops which act as important microhabitats for a range of plants in this heavily cleared region and regional nature reserves. On a return trip, collections were made for several species, including *Acacia anfractuosa, Acacia rossei, Eucalyptus crucis* ssp. *lanceolata, Grevillea paradoxa, Hakea preissii* and *Kunzea pulchella*. These seeds are being propagated and planted out in the trial climate resilient gardens allowing visitors to see how these uniquely adapted native plants, and similarly resilient species, can provide a foundation for resilient urban gardens and ecological landscapes.

KMGBF Objective 3. Tools and solutions for implementation and mainstreaming

TARGET 14: Integrate Biodiversity in Decision-Making at Every Level

NBSAP Enabler: Mainstream nature into government and business decision-making, including in financing, policies, regulations and planning processes

GSPC Action 14. Tools for mainstreaming plant conservation

Case study: Biosensitive urban design mainstreamed in land use planning in the ACT

Urban development is recognised as a major driver of habitat loss in Australia, with many threatened species and ecological communities found only in cities and peri urban areas Research funded by NESP developed 'Biodiversity Sensitive Urban Design (BSUD) principles and frameworks to mainstream biodiversity in urban development. The ACT BSUD Guide represents a first for any government in Australia, using an integrated, systemic and territory-wide focus on maintaining and enhancing natural values and ecosystem function in the urban landscape. The guide provides site assessment and decision-making frameworks that enable biodiversity be considered early in the design and development process, particularly retention of mature native trees. The guide includes ecosystem-specific metrics elicited from experts to guide best practice habitat protection, maintain ecological connectivity, threat mitigation and restoration, as well as advice about implementing existing ACT biodiversity strategies and policies in the urban design context. Development proponents and planning and design professionals as well as assessors are encouraged to look beyond protected species to encompass broader biodiversity values and emerging threats. ACT-Biodiversity-Sensitive-Urban-Design-Guide.pdf

Case study: Green star communities demonstrate how to mainstream biodiversity

Australia's Green building certification system has been extended to all urban developments, mainstreaming the sustainability ideas and expanding the scale and opportunities for retention of biodiversity and provision of habitats. Certification of 'Green Star communities' is available for a range of development typologies from airports, university campuses, greenfield residential projects to mixed-use urban regeneration areas. By the end of 2024, 86 communities have been certified, totalling 19,500 ha of Green Star - Communities Green Star – Communities | Green Building Council of Australia. The Green star certified Ginninderry urban development in the ACT is achieving a threefold increase in retention of existing trees in suburbs, diverse native plantings in open spaces and streets designed for pollinators and 600 hectare conservation corridor along the Murrumbidgee River. ANU researchers are also looking at how the health of the mature trees can be maintained over time in the suburbs to increase habitat and biodiversity.

Case study: Built environment industry takes initiative to design with nature

The recently released Nature Design Guide is a practical, industry-led resource created to help shape a Country-centred approach to nature-based design in the Australian built environment! Developed collaboratively with industry and research, the guide helps to introduce key ecological concepts, provides a range of design actions and real-world case study applications. It outlines key Country and Nature concepts, provides a decision-making tool, and gives practical steps to help project teams embed Country and nature-positive outcomes into the design process. Featuring practical advice, the guide equips professionals designing new developments to do more than target the minimisation of harm, but instead to actively protect, regenerate, restore, and respect the cultural landscapes and natural world. Recognising the real-world challenges of delivery, the guide provides demonstration case studies.

TARGET 21: Ensure Knowledge Is Available and Accessible to Guide Biodiversity Action

NBSAP Enabler: Ensure environmental data and information are widely accessible and support decision-making

GSPC Action 21. Plant information systems
b. Support development and use of existing, comprehensive, authoritative and accessible expertise and online information and biological collections
c. Explore various knowledge systems, including traditional knowledge, for plant conservation
d. Promote continuing updating of World Flora Online and associated databases
Citizen science
e. Develop or support citizen science programmes in collaboration with scientific institutions

21 b) Plant Information systems and d) World Flora online
Experts from Australia's leading botanical and research institutions collaborate closely to provide freely accessible botanical and taxonomic data for use by the research sector and plant conservation community using dynamic interactive digital resources.

The **Australian Plant Name Index (APNI)** is a comprehensive nomenclature for our native and naturalised flowering plants, conifers and ferns. In addition to details of initial publication and typification, APNI records secondary publication of subsequent taxonomic concepts and synonymies. Name Indexes are also available for Australian bryophytes, fungi, lichen, and algae.

The **Australian Plant Census (APC)** is a nationally agreed view of the current taxonomic classification of the Australian vascular flora, derived from evaluation of the published research documented in the APNI. APC family level taxonomy is concordant with the APGIII (Angiosperm Phylogeny Group) classification. A national working group of nomenclatural expert taxonomists from the national and each state herbaria, considers all available prior published work on a plant group and makes recommendations to the Council of Heads of Australasian Herbaria (CHAH), which endorses the proposed taxonomy for use at a national level. In the rare case of deadlock by the working group, CHAH makes an executive decision. Evidence for new taxonomies is considered by the working group as they are published. Work on the APC, and the underlying APNI, is ongoing. Together, they comprise the vascular plant component of Australia's National Species List and are the evolving taxonomic backbone to the *Flora of Australia* and Atlas of Living Australia (ALA). They represent an Australian contribution to international projects such as the Global Biodiversity Information Facility (GBIF), the International Plant Names Index (IPNI), the World Flora Online (WFO) and the Catalogue of Life. Accepted taxonomies for Australia are also available for bryophytes, fungi, lichen, and algae.

The **Australian Virtual Seed Bank,** hosted by the Atlas of Living Australia (ALA) is a national online portal that brings together seed collection and germination data from 11 Australian Seed Bank Partnership members. Updated annually, the portal centralises seed bank data across the country, helping track threatened species collections, guide seed sourcing, and inform national and international conservation reporting. The portal provides open access information to researchers, land managers, and policymakers to support plant conservation, restoration, and recovery efforts. New upgraded spatial search functions will be available for users in 2026.

The Australian Government, through the **Australian Biological Resources Study (ABRS)**, in partnership with the ALA and Council of Heads of Australasian Herbaria support the ***Flora of Australia*.** Information from the original published volumes of the *Flora of Australia* and new family treatments are accessible through a digital platform, provided through the technical infrastructure of the ALA. This "profiles" platform makes use of the nomenclatural and taxonomic backbones of the National Species List (APNI and the APC), integrating descriptions, keys, illustrations, photographs and maps from other ALA applications and services such as the Australasian Virtual Herbarium and the Australian Plant Image Index. Since 2020, the ABRS and Bushblitz programs have provided $2.4 million to support taxonomic research for plants.

The ***Flora of Australia*** holds 14,200 plant profiles, representing approximately 50 per cent of the known Australian vascular flora. Missing family, genus and species profiles will be progressively added by ABRS and the Australian botanical community over the coming decade. The Flora, with its enhanced functionality, will enable the plant conservation community to search and browse thousands of species, identify plants using interactive keys and export information for use offline. ABRS has also committed to work with the World Flora Online Consortium, to contribute *Flora of Australia* content for inclusion in their global systems, once transfer governance arrangements are in place.

Plant species occurrence data can be uploaded direct to the **Atlas of living Australia (ALA**) online national biodiversity data portal, managed by the CSIRO, in collaboration with Australia's museums, herbaria, universities, and the Australian Government. Plants are the third biggest type of occurrence record in the Atlas, at over 24 million occurrence records. The ALA provides powerful mapping and analysis tools with 400 spatial layers, to explore the relationships between plant species distribution and factors like rainfall, temperature, soil moisture, regional boundaries, fire and vegetation (See https://www.ala.org.au/). The ALA is being used in many plant science applications, including supporting large-scale plant health studies to manage disease.

Case studies: Herbarium digitisation: increasing access to visual plant information
Digitisation of collections provides additional security for irreplaceable physical specimens and sharing the visual information for research and conservation. Since 2020, scientists from Botanic Gardens of Sydney (BGoS) have digitised over one million flora specimens representing the diversity of the Australian flora, including over 800 collected by botanists Banks and Solander on Captain Cook's first voyage in 1770. The images are uploaded to Amazon Web Services (AWS) under their Open Data Sponsorship Program and the publicly accessible BGOS Herbarium search portal launched in 2025. This allows searches across key terms-scientific name, collection date, and collector, results providing the high-resolution image and collection data. A further 5,000 vouchers from scientific studies have been digitised in 2025. Australia's largest herbaria, **the Australian National Herbarium** digitised images for over one million records in 2024, using *Picturae,* an automated conveyor belt system. The Picturare system operates like an airport scanner. Specimens are placed on belt and repacked and the photographs checked for any errors at the end. Picturae has created a digitised replica of the herbarium, and the conveyor systems is 10 times faster than a camera set-up. Herbarium images are publicly available using the CSIRO Digital Access Portal.

21. c) Explore knowledge systems, including traditional knowledge, for plant conservation.
Case Study: Linking Indigenous Ecological Knowledge about plants to western science
In partnership with Indigenous communities working on Country, the Atlas of Living Australia is exploring how data platforms can bridge gaps between traditional and western science knowledge about plants and support the health, and empowerment of First Nations peoples. The Djet Biyoo (Flower Awakening) project links Noongar Wudjari indigenous Ecological Knowledge (IEK) to western science to preserve language, for education and land management. On-Country consultation and field trips to Wudjari Country (Fitzgerald River National Park, WA) involved Traditional Owners, Language, Ethno-Botany and botany experts, the ALA project leader and a documentary maker, to collect IEK for 49 plants and 19 animals using a -field data collection app. The processed data was presented back to the TO's in the format it would appear in the ALA Profiles. This consultation allowed the TOs to consent, or not, to their knowledge being shared publicly on the ALA, an essential ethics step for this data project. This IEK has also been included in the Noongar-Wudjari Plant and Animal Online Encyclopedia.

Case study: Victorian Traditional Owner Native Foods and Botanicals Strategy.
The Federation of Victorian Traditional Owner Corporations (FVTOC) represents Traditional Owner Corporations (TOCs) and has developed a pioneering work framework to enable First Nations leadership of the native food and botanicals industry. The Traditional Owner Native Food and Botanicals Strategy, ensures rights, knowledge, and connection to Country, building in international principles– Nagoya Protocol, WIPO, UNDRIP. It's Cultural Protocols: protect and control use of traditional knowledge and practice – Indigenous Cultural and Intellectual Property (ICIP); recognise rights and interests in plant resources; preserve and strengthen social, cultural and economic connections with land and resources; and enable benefit-sharing Agreements.

21. e) Citizen science programs
Plant observations made through citizen science apps like iNaturalist Australia are shared with the Atlas of Living Australia. These platforms are increasingly being used for a range of plant conservation related applications. including BioBlitzes. There is also significant uptake of apps to support biosecurity efforts to monitor invasive weeds and pathogens affecting plants.
The Big Bushfire BioBlitz was a multi-regional Environment Recovery Project over 2 survey periods in 2022 designed to gather scientifically meaningful biodiversity data by engaging everyday people in bushfire recovery. Mobilised 1600 volunteers, more than 25,000 observations helping assess biodiversity loss and gather vital recovery data including for 756 native plants.

Case Study: Providing tools to enable citizen scientists to run biodiversity surveys
BioBlitz events are large-scale citizen science field surveys in Australia, providing a snapshot study of a specific location, where scientists and the community work together to survey and record as many species as possible within a nominated timeframe –generally 24-48 hours. They are flexible in structure, with several different forms being used by practitioners. The Bioblitz Hub has been set up by the Atlas of living Australia to help community conservation groups run a BioBlitz in their local area or region. Survey templates, case studies and resources are provided on the Hub to stage a BioBlitz, and groups can promote their event the Hub's calendar, which lists all the surveys planned around the county. An updated Bioblitz Guide has been develop in 2025 for citizen science practitioners, building on the original Australian BioBlitz Guide, with new content, updated resources, and emerging practices to better support BioBlitz in Australia**.**

Case Study: Citizen scientists tackle the spread of myrtle rust
The Australian Network for Plant Conservation initiated a citizen science program with the ALA. to increase myrtle rust occurrence records and raise public awareness. The project focused on priority plant hosts and locations using i**-Naturalist** to verify reports. A media campaign encouraged use of the app using blogs, newsletters, social media, plant personalities and articles in Cosmos and the Conversation. The project showed public campaigns can fill data gaps about invasive species impact, increasing the geographic and taxonomic range of myrtle rust records, to almost 8000 in the ALA and three new Datasets. Good quality reports in iNaturalist, are also available for data users. The project shows citizen science can support surveillance and can inform future biosecurity campaigns.

TARGET 22: Ensure Participation in Decision-Making and Access to Justice and Information Related to Biodiversity for all

NBSAP Enabler: Ensure equitable representation and participation in decisions relating to nature, particularly for First Nations peoples

GSPC Action 22. Plant conservation and traditional knowledge

Empowering participation of Indigenous peoples requires an all-of-system approach, with involvement at all stages of decision-making to enable leadership on Country. First Nations people are building their own knowledge and practice-based networks and sharing these 'right-way' approaches with communities across Australia. The Firesticks network is revitalising traditional fire practices to improve Country, health and wellbeing. The Indigenous Desert Alliance is enabling leadership in traditional management of Australia's desert ecosystems.

Case study: Supporting indigenous-led planning and management decision-making

53% of the national reserve system is Rangers managed by First Nations people as part of the growing Indigenous Protected Area (IPA) estate. A new toolkit has been developed for IPA managers Establish and manage an Indigenous Protected Area to assist Country management. Using traditional ecological knowledge is key for plant conservation, with Rangers working with their elders on threatened plant species monitoring and protection; habitat restoration; flora surveys; weed and pest animal management; and 'right way' fire management. The Indigenous authored, Our Knowledge, Our Way guidelines (OKOW) elevate Indigenous-led practices for strengthening and sharing knowledge, using case studies of 'right way' practices. The cocreation of seasonal calendars with the CSIRO using traditional ecological knowledge is described in OKOW These calendars translate finely grained knowledge about Country and indicators of change in the landscape, especially native plants, their life history and traits signalling the start and end of seasons. https://www.csiro.au/en/research/indigenous-science/indigenous-knowledge/calendars

Case study: Building a National Indigenous Environmental Research Network (NIERN)

An Indigenous-led network to guide environmental research in Australia aims to connect Indigenous communities with researchers and support right-way science. The National Indigenous Environmental Research Network (NIERN) has been led by Indigenous scholars under the NESP. NIERN starts with the community's research needs to ensure the land (Country) and people (Kin) benefit. The goal is 'self-determination', integrating Indigenous knowledge in all environmental research and priority setting. An extensive elicitation process informed the model which would operate as a service supporting both Indigenous research users and research providers to participate in environmental research. Research services will be delivered through four priority areas: land and sea management; climate change and adaptation; culturally significant places; and biocultural regional planning. A business case has been developed to manage the set-up of NIERN and initial operation (see NIERN Summary Report).

Case study: First Indigenous research strategy for Kakadu National Park (KNP)

This 10 year Indigenous-led Research Strategy identifies research priorities of Bininj/Mungguy Traditional owners and 'right way' science practice in KNP. The strategy sets the research agenda, ensuring Bininj/Mungguy knowledge holders and scientists work together. The Strategy ensures protection of KNP values while delivering community benefits, including training and employment pathways. The strategy builds on co-designed Bininj/Mungguy 'Healthy Country Indicators used to track Country health before and after management to protect cultural values using novel techniques to time control of para grass in the freshwater wetlands.