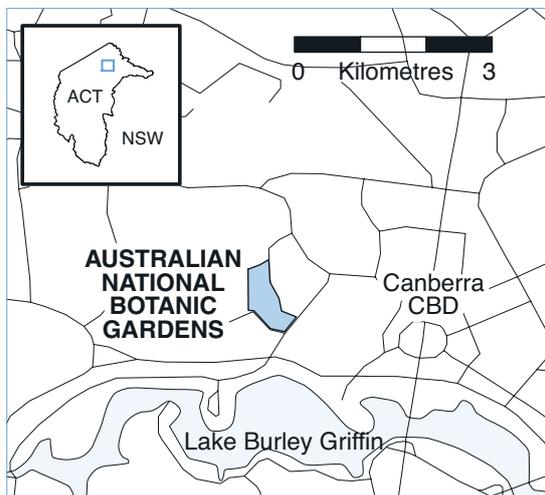


## Australian National Botanic Gardens

<http://www.anbg.gov.au>



### Special features

The Australian National Botanic Gardens (ANBG) is a major scientific, educational and recreational resource. It was one of the first botanic gardens in the world to adopt the study and display of a nation's native species as a principal goal. Approximately one-third of the known flowering plant species that occur in Australia, and about half the known eucalypt species, are represented in its living collection. The ANBG is a national showcase in the horticultural use of Australia's native plants.

The ANBG contributes to meeting Australia's obligations under various international environment conventions to which Australia is a signatory. In particular, the Convention on Biological Diversity recognises the importance of botanic gardens in *ex situ* and *in situ* conservation, research, training, plant identification and monitoring, raising public awareness, providing access to genetic resources, and global cooperation in relation to sustainable use of plant biodiversity.

Location	Latitude 35°16' South, Longitude 149°06' East	
Area	85 hectares	
Proclamation date	17 September 1991	
IUCN category	Category IV	
Biogeographic context	Displays plants from a vast range of biogeographic regions—alpine to tropical, coastal to central desert	
Management plan	Second plan expires 9 January 2009	
Other significant management documents	Management plan implementation schedule; risk assessment and management schedule; ANBG Masterplan (National Capital Authority); Capital Works and Maintenance Plan 2002–2005; Emergency Response Procedures Manual June 2005; ANBG Fire Procedures 2006; kangaroo and wallaby management plans; ANBG Education Service Policy; ANBG Photograph Collection Policy; Agreement for the Establishment and Operation of the Centre for Plant Biodiversity Research between the Director of National Parks and the CSIRO	
Financial	Operating	\$9.169 million
	Capital	\$0.782 million
	Revenue	\$0.661 million



Visitors	509,325 to site 122,762 to visitors centre
Living plants	Planted in 2006–07: 12,478 Total number of taxa in the living collection: 6,673 Total number of registered plants in the living collection: 90,506
Herbarium specimens	Specimens added to database in 2006–07: 37,380 Total number of specimens in collection: ~1.2 million
Australian Plant Image Index	Added in 2006–07: 1,885 Total number of photographs in collection: 35,617
Permits	4 commercial activity permits; 58 wedding or wedding photography licences; 101 licences to publish 640 photographs from the collection

<b>International conventions and agreements</b>	
World Heritage Convention	Supports Australia's World Heritage sites through botanical research, scientific plant collections, plant identification, botanical information management and horticultural and educational programmes
Wetlands (Ramsar) Convention	Supports Australia's obligations under the Ramsar Convention through access to plant identification services and data on aquatic plants in the Australian National Herbarium, and through delivering information on Australia's aquatic plants through its website
Other agreements	Collaborates with international organisations including: <ul style="list-style-type: none"> <li>· International Association of Botanic Gardens</li> <li>· International Association of Plant Taxonomists</li> <li>· International Plant Propagators Society</li> <li>· International Union of Biological Sciences Taxonomic Databases Working Group</li> <li>· International Plant Name Index (Kew Botanic Gardens and Harvard University)</li> <li>· Global Biodiversity Information Facility</li> <li>· International Organisation for Plant Information World Vascular Plant Checklist Project</li> <li>· Species 2000</li> </ul>

<b>Environment Protection and Biodiversity Conservation Act 1999</b>	
Heritage	On Commonwealth Heritage List

## Centre for Plant Biodiversity Research

The Centre for Plant Biodiversity Research is a joint venture by the ANBG and CSIRO Plant Industry. It was formed in 1993 and renewed for a further 10 years in 2000.

The Australian National Herbarium is the foundation of this facility, housing voucher specimens for research and environmental studies and for plants in the ANBG with databases supporting the living, herbarium, and photograph collections. The herbarium is a major contributor to the network of Australasian herbaria, to Australia's

Virtual Herbarium—a national project involving all states and territories—and to the Australian Plant Census project to produce a national endorsed list of scientific names for Australian plants.

## Monitoring

The ANBG's scientific planting is documented through voucher specimens in the Australian National Herbarium. A team of botanists, including national and international collaborators, ensure that the correct botanical names are always applied. New collection accessions help document the occurrence and distribution of plants in Australia.

A specialised and sophisticated database system maintains essential links between specimens in the herbarium, contemporary scientific literature, the living plants in the gardens and the photographs in the Australian Plant Image Index.

A team of ANBG staff regularly assesses the ANBG's living plant specimens.

A new computerised irrigation management system installed in 2006 is being used to monitor and manage irrigation more efficiently and reduce water use.

## Future challenges

Major challenges are:

- water management in light of the continuing drought and sharp increases in unit water costs in Canberra. With further restrictions expected to come into force in 2007–08, actions will be needed to reduce nursery activities to maintenance of the 'permanent pot collection', reduce new propagation to a minimum, possibly sacrifice replaceable areas like lawns and expedite the long-term aim to establish a non-potable water source to water plants
- studying the impact of climate change. This will be a major focus for the ANBG as it seeks to understand and adapt to climate change, and to develop and communicate sound climate change messages about Australia's biodiversity and horticultural practices to visitors and clients
- placing a monetary value on the living, herbarium and photograph collections. Valuation is necessary to ensure the collections are adequately resourced
- maintaining the ANBG's role as a tourist attraction in the face of water restrictions. Visitor attractions like the Friends of the ANBG's summer concerts and guided tours will continue to be important
- continuing work on the Australian Plant Census project to produce a list of flowering plant names for the whole of Australia that is endorsed by the Australian Government and the state and territory herbaria. The project coordinator is located at the Australian National Herbarium and the project is due for completion in 2008 (see case study on page 55)
- implementing the next phase of Australia's Virtual Herbarium. Funding for the first phase ended in 2006 and the ANBG is working with state and territory herbaria and museums to build on the project through new national infrastructure proposals.



## Report on performance by key result areas

### **KRA1: Natural heritage management**

#### *Major issues*

- Water management infrastructure
- Plant records and census of living plant collection
- Introduction of GIS to living collection management

#### *Actions*

- Increase water use efficiency
- Stocktake the living collection
- Use GIS to map the living collection

#### *Performance results 2006–07*

- Increased water use compared to 2005–06 due to hot and dry weather conditions. The ANBG more than met its own target of replacing 50 per cent of net evaporation per year; however this still fell short by 21 per cent of ACTEW's target allocation of water to the ANBG
- Developed a strategy to undertake a complete living plant census in 12 months (instead of three years as previously) via deployment of nursery staff
- Implemented the first phase of the ANBG's GIS

### **KRA2: Cultural heritage management**

#### *Major issues*

- Displaying the flora of Australia
- Education

#### *Actions*

- Display the flora of Australia in a horticultural setting
- Provide cultural interpretation and education programmes relevant to the Australian flora

#### *Performance results 2006–07*

- The ANBG displays about one-third of the plant species thought to occur naturally in Australia in a managed horticultural setting. Water restrictions put much of the collection under stress and resulted in some losses
- Promoted the cultural values of Australian native plants with exhibitions in the visitor centre and elsewhere in the ANBG: 'Flora Tasmanica', 'Bare Winter', 'A Tree in the Palm of your Hand Bonsai Exhibition', 'Snakes Alive!', 'Blooming Threads' and 'Caring for Land'
- 16,897 children attended the ANBG education programmes

- Distributed approximately 500 copies of the education unit's poster on the floral emblems of Australia to schools and educators on demand

#### **KRA4: Visitor management and reserve use**

##### *Major issues*

- Visitor management
- Visitor safety

##### *Actions*

- Conduct visitor surveys
- Initiate a marketing plan
- Conduct an eastern brown snake survey

##### *Performance results 2006–07*

- Completed a major visitor survey in conjunction with the umbrella organisation Botanic Gardens of Australia and New Zealand and commenced a visitor survey with the National Capital Attractions Association
- Drafted a marketing strategy
- Completed an eastern brown snake survey. An interim snake management policy was drafted and approved

#### **KRA5: Stakeholders and partnerships**

##### *Major issues*

- Friends of the ANBG
- Greening Australia
- Centre for Plant Biodiversity Research
- Botanical forums: the Council of Heads of Australasian Herbaria, Council of Heads of Australian Botanic Gardens, Global Biodiversity Information Facility and Taxonomic Databases Working Group
- Commonwealth Environment Research Facilities Taxonomy Hub
- ACTEW Corporation

##### *Actions*

- Strengthen the partnership between the ANBG and the Friends of the ANBG
- Continue hosting the Greening Australia Community Seedbank on the ANBG site
- Continue to participate in the joint ANBG–CSIRO Centre for Plant Biodiversity Research
- Continue the Australian National Herbarium's leadership role in the Council of Heads of Australasian Herbaria



- Continue the Australian National Herbarium's participation in the Council of Heads of Australian Botanic Gardens, Global Biodiversity Information Facility and Taxonomic Databases Working Group
- Continue the Australian National Herbarium's participation in the Commonwealth Environment Research Facilities Taxonomy Hub in association with CSIRO biological collections and major universities
- Liaise with ACTEW Corporation which is the sole supplier of water to the ANBG and administers the ACT Government's water restrictions

#### *Performance results 2006–07*

- The Friends of the ANBG ran the annual students' photographic competition and the autumn and spring plant sales; published quarterly newsletters; provided volunteer guided walks each day; opened the Friends Cascade, a new water feature; opened the Friends Shelter, the first project of the Friends' Public Fund; and supported the ANBG's annual summer concerts in January–February 2007
- Continued the close collaboration between the ANBG seedstore and Greening Australia including joint field collecting, seed storage and management. The ANBG also provides Greening Australia with space for seedling production
- Continued ANBG staff's management, research and technical support roles in the Centre for Plant Biodiversity Research and the Australian National Herbarium
- The Council of Heads of Australasian Herbaria's Australia's Virtual Herbarium project tendered for and won a government contract to prepare weed profiles for the Department's Species Profile and Threats Database.
- Continued membership of technical working groups under the Global Biodiversity Information Facility and Taxonomic Databases Working Group
- Undertook a project to database and manage digital images of historical specimens from the Royal Botanic Gardens, Kew's herbarium collection. The project is funded by the Global Biodiversity Information Facility
- Ran a workshop on life science identifiers for Australian herbaria and participated in a workshop on database standards, both under the auspices of the Taxonomic Databases Working Group
- Took a leadership role within the Council of Heads of Australian Botanic Gardens in developing a national climate change adaptation response for botanic gardens
- Received support through the Commonwealth Environment Research Facilities' Taxonomy Hub project and began recruitment to key positions
- Maintained a positive working relationship with ACTEW which administers the ACT Government's water restrictions. The ANBG received a water use exemption to maintain the living collection

**KRA6: Business management***Major issues*

- Budget management
- Staff management
- Risk management

*Actions*

- Ensure business continuity and service delivery
- Manage staff resources efficiently
- Continue ongoing risk assessment

*Performance results 2006–07*

- Significant increases in the unit cost of water have reduced the ANBG's ability to deliver on other key functions
- Attempting to ensure business continuity and delivery of existing services with declining resources is impacting on staff dedicated to the high standards of a national botanic garden
- The effects of an ageing workforce are starting to be felt, especially among horticultural staff managing the living collection
- Maintained and improved staff consultation, involvement and capacity building formally (through training, the occupational health and safety committee, staff planning days) and informally (through opportunities for higher duties, informal consultation)
- Damage to buildings and nursery polyhouses from the February 2007 hail-storm and failure of the herbarium building's air-conditioning system in summer highlighted the importance of risk monitoring through riskwatch lists, and identifying appropriate action. Drought is the most significant ongoing direct risk to the living collection

**KRA7: Biodiversity knowledge management***Major issues*

- Australian National Herbarium
- Australian plant names
- Taxonomic botanical research
- Botanical database and information management
- Australian Plant Image Index
- The ANBG website, incorporating the Centre for Plant Biodiversity Research and the Friends of the ANBG
- Climate change

### Actions

- Maintain and curate the Australian National Herbarium collections and make botanical data, information and expertise available to the national and international botanical community
- Develop and maintain the Australian Plant Name Index and the Australian Plant Census to define and list all the flowering plants in Australia
- Undertake taxonomic and systematic research, and publish and disseminate research findings
- Develop and maintain scientific databases of Australian plant information
- Enhance the extensive collection of photos and illustrations of plants and further develop access to the collection using innovative technology
- Promote and provide information about Australian native plants via the internet
- Position the ANBG as a leader in *ex situ* responses to climate change

### Performance results 2006–07

- Curated and databased 37,380 specimens which contributed to the Australia's Virtual Herbarium project
- Continued management of the Australian Plant Name Index and the collaborative Australian Plant Census project to produce an agreed list of scientific names for Australia's flowering plants. The project is funded through the Natural Heritage Trust and endorsed by Australian Government, state and territory herbaria
- Researchers completed scientific papers or publications resulting from research undertaken at the Australian National Herbarium. Areas of study include Australian Orchidaceae, Asteraceae, Myrtaceae, Malvaceae, Santalaceae and the bryophytes
- Born-digital images started to contribute significantly to the Australian Plant Image Index which was previously based on 35 millimetre slides; 2,315 additional images were made available via the web
- Continued to develop the website as the premier online resource for information about Australian plants. The website recorded an average of 45,000 hits each day, an increase of 10,000 per day from 2005–06
- Developed a botanic gardens climate change website
- Initiated a seed collecting project in the vulnerable alpine areas

## Making Australian plants count



*Terminalia bursarina* – This tree, widespread across northern Australia, has been known by different names by different authors. It has been treated as a distinct species (especially by botanists in the NT) or included within the related species *T. canescens* (especially by Queensland botanists). Recommended nomenclature through the Australian Plant Census is to treat both taxa as distinct species

Compiling a list of all naturally occurring and naturalised Australian plants is a major undertaking only attempted twice before.

For a plant census to be truly useful, it must include all names, including synonyms, and provide information on the taxonomic concept of the plant to which each name or names are applied. In the past, different botanists and state herbaria used different concepts when applying names to their flora, with plants apparently 'changing names across borders'. The need for a unified Australian Plant Census became more urgent as the Australian Government tried to align new legislative schedules with state government legislation.

In 2004 the Council of Heads of Australasian Herbaria, including representatives of all the state, territory and Australian Government herbaria, agreed to produce this much needed list with funding from the Natural Heritage Trust. The aim is a 'consensus census' which presents the majority view, in some cases a compromise between conflicting scientific opinions, on the current state of Australia's taxonomic plant

knowledge.

The census project is coordinated by the Australian National Herbarium and builds on the foundation of the Australian Plant Name Index which is managed by the herbarium on behalf of the Australian botanical community. The index lists every published use of every plant name for the Australian flora, including introduced naturalised species. The census tells users which of those names are currently recognised and which are regarded as synonyms, along with basic state-level distribution. Decisions are made with extensive input from botanists in all major Australian herbaria, making the census a truly national, collaborative project.

The process so far has involved working through the flowering plants family by

family. The list is refined by consensus with a working group of botanists in each herbarium. By mid-2007, 205 families had been treated covering about 50 per cent of Australia's flowering plants. Some large groups such as the Proteaceae, Chenopodiaceae and Mimosaceae have been completed but many major groups remain to be tackled, including the Poaceae, Myrtaceae and Asteraceae.

Unlike previous plant lists the census is a dynamic database, constantly updated as new information is published. In that sense it will never be 'finished' but the first pass at a consensus census for all Australian flowering plants is expected by late 2008. In the meantime, the census is accessible to scientists and the public for those families treated so far.

See the results so far at <http://www.anbg.gov.au/chah/apc/index.html>.