

Botanists of Australian Trees

- 1 *Banksia serrata*. Genus honours Joseph Banks**
- 2 *Corymbia peltata* ssp *leichhardtii*. Named to honour Ludwig Leichhardt.**
- 3 *Eucalyptus regnans*. Named by Ferdinand von Mueller**
- 4 *Eucalyptus mannifera*. Charles Louis L' Heritier coined the name "*Eucalyptus*". Species named by Robert Mudie from Allan Cunningham's specimen and notes.**
- 5. *Eucalyptus andrewsii*. Honours botanist/geologist E. C. Andrews. Named by Joseph Maiden.**
- 6. *Araucaria cunninghamii*. Named by Robert Mudie for Allan Cunningham.**
- 7. *Grevillea robusta*. Collector Allan Cunningham, named by Robert Brown honouring C.F. Greville.**
- 8. *Eucalyptus viminalis*. Named by Jacques Julien Houton de Labillardiere**

This walk will discuss the botanists associated with particular trees in the Australian National Botanic Gardens (ANBG), either because they named the species or the species was named in their honour. As the ANBG is a collection of native species all the trees will be Australian although the botanists featured will be Australian, British, French and German. They all made outstanding contributions to Australian science and their stories encompass adventure, mystery, sex and even murder!

Stop 1 Near Banks' bust on VIC terrace

Sir Joseph Banks (1743-1820). Australia's first botanist

Tree species

Saw banksia, *Banksia serrata*, is a common coastal species extending from southern Queensland to Victoria and northwest Tasmania.

The botanist

This species was named in Joseph Banks' honour by Swedish botanist Carl Linnaeus the younger based on a specimen collected by Banks at Botany Bay NSW in 1770 during Cook's first expedition to Australia. Carl Linnaeus was the son of the founder of modern botanical nomenclature. Linnaeus also suggested that the new southern land should be named 'Banksia'!! Banks was a British naturalist and patron of the natural sciences.

Key points

An adventurer, as a young man, collected in Canada, Australia, New Zealand and Iceland

Banks reached Australia in 1770 with Captain Cook's expedition. Cook re-named "Stingray Bay" as "Botany Bay" after Banks returned to the ship with so many new plant species. The plant material he collected on the entire voyage resulted in about 1300 new species

The world-wide plant collecting program he initiated ensured thousands of plants became accessible across the world.

His impact on the study of natural history in both Britain and Australia cannot be overestimated.

Background information

Joseph Banks, was born in London, in 1743, After inheriting his family's fortune in the early 1760s he pursued his passion for natural history, and in particular, botany at Oxford University. In 1766 he collected plants, animals and rocks in Canada and was elected a Fellow of the Royal Society.

He joined Captain Cook's 1768 expedition to Tahiti for astronomical observations and made collections and observations in South America, Tahiti and New Zealand before reaching Australia in 1770. The plant material collected on the voyage resulted in about 110 new genera and 1300 new species.

Back in England he managed his own estates, controlled the Royal Botanic Gardens, Kew, was a Trustee of the British Museum. and became President of the Royal Society, an office which he held for 43 years until his death in 1820. He continued to sponsor plant collectors in different parts of the world including Australia (eg Robert Brown, Allan Cunningham). Banks is credited with the introduction into cultivation of over 7000 new species.

On the bicentenary of Cook's visit to Australia the Australian Academy of Science presented the Royal Society in London with a painting of *Banksia serrata* by the botanical artist Celia Rosser.

In summary: Banks through his travels, studies and patronage of scientists proved that there was more to him than wealth and powerful connections. His social status, including friendship of King George 3rd, was used wisely for the greater good of science rather than for personal gain or glory. He established Kew as a world-renowned centre of excellence, a position it still retains. Perhaps his greatest gift to the gardener was the creation of a world-wide plant collecting program that ensured thousands of plants would become accessible across the world.

Stop 2 Top of steps above southern car park

Ludwig Leichhardt , explorer and botanist

***Corymbia peltata ssp leichhardtii*, Leichhardts**

Rustyjacket

The tree

This yellow-barked bloodwood has an extensive distribution on poor sites on the Great Dividing Range in Queensland. Leichhardt would undoubtedly have seen this species on his first expedition. The name '*peltata*' refers to the attachment of the leaf stalk (petiole) within the margin of the juvenile leaves.

The botanist

Queensland botanist Frederick Bailey named this Queensland bloodwood in Leichhardt's honour in 1906. It was originally named *Eucalyptus leichhardtii* but later reduced to subspecific status of *Corymbia peltata* by Sydney botanist Lawrence Johnson in 1973. Leichhardt's name is also commemorated in a number of plants, including the genus *Leichhardtia* and species of the genera *Bridelia* and *Gmelina*.

Key points

Probably the best trained naturalist in Australia in the 19th century. Although Ludwig Leichhardt was principally an explorer, he made many valuable collections of plants and animals during his travels in Australia.

Led one of the most remarkable exploration journeys in Australian history in which he discovered many fine rivers and much country suitable for settlement between southern Queensland and Darwin.

In 1847, at the age of 35 years, he tried to cross Australia from east to west but he and his party disappeared in Central Australia without trace. The fate of this expedition remains an intriguing mystery.

Background information

Frederick Wilhelm Ludwig Leichhardt was born in Germany in 1813. He was competent in at least six languages and he had studied philosophy, medicine, geology, natural sciences and physiology. He was probably the best trained naturalist in Australia in the 19th century.

His second expedition in 1847 to cross Australia from east to west failed. At the age of 35 years he tried again the following year but he and his party disappeared in Central Australia without trace. The fate of this expedition is unknown.

In about 1900, a 15-cm-long brass plate with Leichhardt's name and the year 1848 stamped on it was found attached to a gun butt in a boab tree blazed with an "L". This is one of the best pieces of evidence yet as to Leichhardt's fate: proof the ill-fated explorer's last journey took him at least three-quarters of the way to the Swan River. Acquired three years ago by the National Museum of Australia, this is the most tangible relic from Leichhardt's final expedition. The fate of this remarkable man remains a mystery.

Stop 3 Edge of Tasmania Rainforest Gully

Baron Ferdinand von Mueller, botanist, named

Eucalyptus regnans

Tree species

Occurs in Victoria and Tasmania. Mountain Ash, *Eucalyptus regnans*, is one of the tallest trees in the world, only exceeded by the redwoods of California.

The botanist This exceptional tree was named by an exceptional botanist, Baron Ferdinand von Mueller. '*regnans*' comes from the Latin *regnans*, 'ruling', alludes to the height and dominance of the trees.

Key points

Ferdinand von Mueller was, the first Government Botanist of Victoria and arguably the greatest Australian botanist of the 19th century.

He made botanical explorations throughout Australia and named many species, especially eucalypts.

An outstanding achievement was development of an extensive network of collectors and correspondents. In particular, he encouraged women collectors, often on stations in remote localities, to send him plant specimens. At a time when women had little recourse to science his network of ladies was extraordinary. The opposite sex featured in his personal life but he never married; although he was engaged at least twice.

He made a great contribution to medical science. He wrote extensively about the medical properties of Australian plants and encouraged the development of the eucalypt oil industry in Victoria. He was awarded an Honorary Doctorate of Medicine from the University of Rostock in Germany.

Background information

Born in Rostock, Germany in 1825, Ferdinand Muller came to Australia for health reasons in 1847. He changed his name to Mueller and found employment as a chemist in Adelaide. He had a great interest in botany and six years later in 1853 was appointed as the first Government Botanist of Victoria.

He produced a large number of significant botanical publications. He regretted not publishing a comprehensive flora of Australia but provided significant help to English botanist George Bentham's 7-volume *Flora Australiensis*. Much of his work has never been superseded and is a measure of his lasting contribution to botany.

Though fiercely loyal to the British Crown, he was still a German and his European scientific contacts were of immense value to Australian science. He was largely responsible for the international recognition given to Australian scientific endeavour and he received honours in Germany and Russia.

Von Mueller encouraged and supported leading explorers of the time including Forrest, McDouall Stuart and Ernest Giles. He also supported efforts to find what happened to Ludwig Leichhardt. His greatest personal expedition was the 16 months he spent as a member of A.C. Gregory's Northwest Australian Expedition (1855-56) which travelled 8000 km from the Northern Territory-Western Australian border to Moreton Bay. A hill in the northern Tanami Desert is named Mount Mueller as are hills in the Northern Territory, Tasmania and Victoria. His name is given to a waterfall in Brazil, a glacier in New Zealand

and a mountain Range in Papua New Guinea as well as to a river, creek and lake in Australia.!

To develop his extensive network of collectors and correspondents, he advertised in newspapers for collectors and urged his contacts to do so. As a result, he enlisted a veritable army of thousands of willing enthusiasts from many walks of life. He wrote between 2000-3000 letters each year to maintain contact. In particular, he encouraged women collectors, often on stations in remote localities, to send him plant specimens. He undertook to acknowledge all new discoveries and named several plants after their female discoverers. He encouraged women artists and corresponded with about 200 women, mostly amateur artists.

Von Mueller established the National Herbarium of Victoria, the first in Australia. When he died in 1896, this herbarium contained about a three-quarters of a million specimens, mainly from Australia. Among the Australian collection are plants collected by Joseph Banks and Daniel Solander at Botany Bay in 1770. Other historical riches include over 2000 specimens collected by Robert Brown during Flinders' circumnavigation of Australia (1801–1805), and several hundred specimens collected on the Burke and Will's expedition.

Mueller was a complex man with many interests. One interest was 'acclimatisation' of plants and he distributed seeds of many Australian plants to botanic gardens and scientists around the world. He reportedly gave eucalypt seeds to the Bishop of Melbourne to give to other bishops attending meetings in Rome. He encouraged Joseph Bosisto set up the eucalyptus oil industry in Victoria.

He had little private life, his time, energy and finance being devoted to his work. Ladies featured in his personal life but he never married; though engaged to Euphemia Henderson in 1863 and Rebecca Nordt in 1865. He died in Melbourne in 1896 aged 72 years.

Stop 4 Near group of brittle gums at edge of monocot garden.

Eucalyptus mannifera

Charles Louis L’Heritier de Brutelle responsible for the generic name “*Eucalyptus*”

Robert Mudie named *Eucalyptus mannifera*

The Tree

Brittle gum is a small tree 15-20 m tall. Principal occurrence in New South Wales but extending into Victoria. Occurs mainly on the Tablelands. An attractive smooth-barked tree with brittle timber and little commercial use. Frequently used as a street tree in Canberra. It was named by Scotsman **Robert Mudie** (1777-1842). Its nearest relative is *Eucalyptus scoparia*.

Mudie was a newspaper editor, author of many books, and possibly an amateur botanist who had access to explorer Allan Cunningham’s brittle gum specimens (collected Bathurst NSW) and notes at Kew. Remarkably he appears to have copied the name, diagnosis, and much of the account from Cunningham’s notes when he published a valid description in 1834 without reference to Cunningham. Hence Mudie is accepted as the author of the name!

The botanist

Charles Louis L’Heritier de Brutelle was a Frenchman working in London when he coined ‘*Eucalyptus*’ for the genus of a specimen (*Eucalyptus obliqua*) collected in 1777 from a tree on Bruny Island off the south coast of Tasmania during Cook’s third expedition.

The generic name is derived from the Greek roots ‘*eu*’ and ‘*calyptos*’ meaning ‘well’ and ‘covered’ in allusion to the operculum of the flower bud (a feature common to many other eucalypts). The name *Eucalyptus obliqua* was published in 1788-89 and coincides with the date of official settlement of Australia. By 1800 several more eucalypts had been described and named, mainly from the Sydney region.

Main points

Robert Mudie never saw a eucalypt in the wild or visited Australia but named a prominent eucalypt.

Frenchman L’Heritier coined the name ‘*Eucalyptus*’ for the new genus. So it was that a man who had never glimpsed the great South Land, never saw a eucalypt in the wild, succeeded in naming the genus of the most important and dominant tree in the Australian flora.

L’Heritier in 1800 he was murdered with a blow from a sabre while out walking at night in Paris.

Background information

L'Heritier came from a wealthy Parisian family and began working as a judge in 1755. He employed several plant collectors and, as many of the plants were new to science, he planned a publication but before he could do this the French Revolution began in 1789.

In 1785 L'Heritier and his illustrator, Pierre-Joseph Redoute, were involved in a scandal over a collection of South American plants. To avoid the problem, they packed up the collection and fled to England. L'Heritier was able to work at Kew on the Joseph Banks' plant collections from 1786-87. Amongst the specimens he described was a tree from Tasmania – later *Eucalyptus obliqua*.

L'Heritier coined the name '*Eucalyptus*' for the new genus. It means 'well-covered' in reference to the operculum, or lid, which covers the flower in the bud.

When L'Heritier returned to France he, was elected to the Academy of Sciences but in 1793 he was dismissed from his post as judge and arrested. He was saved from the guillotine by powerful friends on the basis that he had not yet completed describing the South American collection! However, in 1800 he was murdered with a blow from a sabre while out walking at night in Paris. His assassin was never caught.

He was commemorated with the genus *Heritiera*, now *Argyrodendron*. (2 rainforest trees species of the latter in northern NSW and Queensland)

Stop 5 Below *Asteraceae* garden ***Eucalyptus andrewsii* and botanist/geologist Ernest Andrews and botanist J. H. Maiden**

The tree

Eucalyptus andrewsii, New England blackbutt, is a tall eucalypt found mainly on the northern tablelands of NSW and adjacent southern Queensland. It was named by Joseph Maiden in honour of Ernest Andrews.

The botanists

Australian Ernest Clayton Andrews (1870-1948) was NSW Government Geologist for 10 years. He had an interest in plant ecology and the geographical distribution of native plants. and collected the type specimen for *Eucalyptus deanei*.

London-born Englishman Joseph Henry Maiden (1859 -1925) was NSW Government Botanist and Director of the Botanic Gardens', He published *The Flowering Plants and Ferns of New South Wales*, the *Forest Flora of New South Wales*, and his 8--volume *A Critical Revision of the Genus Eucalyptus* remained a major reference for over 50 years. He was author of numerous species including *Eucalyptus andrewsii*.

Joseph Maiden retired in 1924, and died in Sydney in 1925, *Eucalyptus maidenii* and *Acacia maidenii* are named in his honour.

Main points

Maiden made a major contribution to knowledge of the Australian flora, especially the genus *Eucalyptus*.

He was the NSW Government Botanist and Director of the Botanic Gardens, He established the colony's first herbarium and produced many significant botanical publications.,

He was passionate about acacias and an active office-bearer in the Wattle Day League which organised the celebration of Wattle Day from 1913. He even named his daughter 'Acacia'.

Background information

Ernest Clayton Andrews (1870-1948) was born in Sydney, led expeditions to Fiji and Tonga to study coral reefs before joining the NSW Department of Mines. He was Government Geologist for 10 years. He was a distinguished member of several learned societies and a close friend of botanist Joseph Maiden and Richard Cambage (botanist and geologist). They stimulated his interest in plant ecology and the geographical distribution of native plants. He collected the type specimen for *Eucalyptus deanei*.

Joseph Henry Maiden (1859 -1925) was a botanist who made a major contribution to knowledge of the Australian flora, especially the genus *Eucalyptus*.

Born in London, he came to NSW in 1880. In 1881, His first book, *Useful Native Plants of Australia*, was published in 1889, in which he acknowledged his debt to the work of Victorian botanist Ferdinand von Mueller.

In 1896, Maiden was appointed NSW Government Botanist and Director of the Botanic Gardens, He immediately established the colony's first herbarium, as well as a museum and library. He wrote *The Flowering Plants and Ferns of New South Wales*, and the *Forest Flora of New South Wales*,

He became the recognised authority on *Acacia* and *Eucalyptus*. He published about 45 papers, and his 8--volume *A Critical Revision of the Genus Eucalyptus* remained a major reference for over 50 years. This work was illustrated by Margaret Flockton, the first botanical artist to be employed full time by an Australian Herbarium. Maiden was author of numerous species including *Eucalyptus andrewsii*.

He was passionate about acacias and an active office-bearer in the Wattle Day League. The Wattle Day League was established in 1913 to organise the celebration of Wattle Day. He even named his daughter 'Acacia'.

Stop 6 Conifer area

***Araucaria cunninghamii* and botanist/explorer Allan Cunningham.**

The tree

Araucaria cunninghamii (Mudie), hoop pine, is a tall conifer from northern NSW through Queensland and into Papua New Guinea and West Papua (Indonesia). First collected by Joseph Banks in Queensland when Cook had to beach the Endeavour near Cooktown for repairs after striking a reef

It has been planted commercially as a source of timber in Queensland for many years. It is fast growing and has a light coloured timber which is odourless and tasteless. Because of these properties it was used to produce boxes in which butter was shipped to Europe for many years. The Queensland company, Austicks began manufacturing ice cream sticks and coffee stirrers in Gladstone in 1997. and produced 1.2 billion units annually for the global market. It was the last wood processing plant of its kind in Australia when it closed August 2013.

The botanist

Scotsman Robert Mudie (1777-1842) was again responsible for the naming of another of Cunningham's collections from the banks of the Brisbane River. He published the description in *The Picture of Australia: exhibiting New Holland, Van Dieman's Land, and all the settlements, from the first at Sydney to the last at the Swan River*. (London: Whittaker, Treacher, and Co., 1829). The name honours English botanist and explorer, Allan Cunningham.

Key points

Allan Cunningham was one of the great early botanists of Australia and equally famous as an explorer.

Cunningham is most frequently remembered as an explorer and particularly for his discovery of Pandora's Pass, the Darling Downs and Cunningham's Gap, but exploration was to him a secondary interest that could be pursued in conjunction with his real purpose, the study of botany

He is responsible for 139 names (5 genera, 133 species, 1 variety) of apparently valid status. A further 317 species and 6 genera have been described by other authors based on his collections.

Background information

Allan Cunningham was the son of a Scottish gardener who started working as a conveyancing clerk. He went to work at Kew Gardens and was selected by Joseph Banks to be an overseas collector, he arrived in Australia in December 1816.

Cunningham joined several exploration expeditions (Oxley, King etc.) and collected plants in many parts of Australia. He would have been very familiar with hoop pine from his travels in northern New South Wales and coastal Queensland. He also collected in Brazil, New Zealand and made a comprehensive survey of the flora of Norfolk Island. On a visit to neighbouring

Phillip Island his party was robbed of most of their equipment and provisions by a boatload of escaped convicts! In his journal he listed 104 plant species as native to Norfolk Island

After 15 years (in 1831) he returned to England to work on his collections but in 1837 he returned to New South Wales to replace his deceased younger brother, Richard Cunningham as Government Botanist. Allan Cunningham resigned the Government Botanist position after less than a year, but remained in Australasia until his death in Sydney in 1839 at only 47 years of age.

Fellow botanists have honoured the Cunningham brothers' work by giving their name to a number of Australia's trees: *Araucaria cunninghamii* (hoop pine) *Archontophoenix cunninghamiana* (Bangalow palm), *Casuarina cunninghamiana* (river sheoak), *Diplogottis cunninghamii* (native tamarind now *D. australis*), *Ficus cunninghamii* (white fig, now *F. infectoria*), *Medicosma cunninghamii* (bone wood), *Nothofagus cunninghamii* (myrtle tree, Tasmania), *Pennantia cunninghamii* (brown beech), and *Polyosma cunninghamii*. The president of the Linnean Society in London, reporting his death to the society, commented: 'He was distinguished for his moral worth, singleness of heart, and enthusiastic zeal in the pursuit of science.'

Stop 7 Conifer area

***Grevillea robusta* Named by Scottish botanist Robert Brown honouring English patron of botany C.F. Greville based on type specimen collected by English botanist Allan Cunningham**

The tree

Grevillea robusta, silky oak, occurs in coastal areas of northern New South Wales and southern Queensland. It is the largest of the 250 grevilleas occurring in Australia. It was used widely throughout the world as a cover crop for tea and coffee. It is favoured by many African farmers, especially in Kenya, for planting on their farms.

First collected and described by botanist and explorer Allan Cunningham (see Stop7) who found this species on the banks of the Brisbane River in 1827.

The name was published in England in 1830 by Robert Brown. *Grevillea* is named after Sir Frances C. Greville (1749 -1809), an English patron of botany and co-founder of the Royal Horticultural Society, and *robustus* from the Latin meaning 'strong' or 'robust' in reference to the size of the tree compared to other species of *Grevillea*.

The botanist

Dr Robert Brown (1773-1858) was a great Scottish botanist who started his career as an army surgeon and amateur botanist. Joseph Banks recommended him as the naturalist to accompany Matthew Flinders on board the HMS *Investigator* for the epic voyage around

Australia. He also collected in Tasmania and New South Wales before returning to England in 1810 where he produced the first systematic account of the Australian flora. He has been called "The Father of Australian Botany".

Main points

He contributed made many plant collections around Australia and named many new plants.

Produced the first systematic account of the Australian flora. He has been called "The Father of Australian Botany"

Discovered 'Brownian motion'

Background information

Robert Brown (1773-1858) was the naturalist on board the HMS *Investigator* when Matthew Flinders explored the coasts of Australia in 1801. Apart from his botanical duties Brown acted as interpreter when Flinders met the French explorer Nicolas Baudin in what he later named Encounter Bay in South Australia. After the voyage Brown remained in Australia until 1805, collecting in Tasmania and New South Wales. Brown recorded over 2000 species new to science at the time when only 33,000 species were known in the entire world. When he returned to England he became Sir Joseph Banks' Secretary and eventually inherited Banks' residence and became the sole custodian of the greatest herbarium and botanical library in the world.

Robert Brown is most famous for noticing a phenomenon while studying pollen grains through a microscope in 1827. (The year Cunningham collected silky oak in Queensland). He observed that pollen grains in water moved around in a jerky fashion which became known as 'Brownian motion'. The observation became important for those studying atomic theory and Albert Einstein later worked out the statistics behind the movement.

Robert Brown's name is commemorated in the genus *Brunonia*, *Eucalyptus brownii* and as the author of many other Australian plant names. However, when he died in England in 1858 his passing went unnoticed and unrecorded in Australia!

Stop 8 Edge of Rain Forest Gully

Eucalyptus viminalis

Jacques J.H. de Labillardière, (1755 - 1834) named *Eucalyptus viminalis*.

The tree

Eucalyptus viminalis, manna gum, is a tall tree, commonly 30-50 m in height, occasionally 90 m. Found mainly in New South Wales, Victoria and Tasmania with lesser occurrences in South Australia and Queensland. The canopy often has conspicuous ribbons of partly decorticating bark.

The botanist

Labillardière named this species based on a specimen he collected at Recherche Bay in Tasmania. He named several Tasmanian eucalypts such as *E. globulus* and *E. ovata*. His name is honoured in the genus *Billardiera* (Pittosporaceae), a small genus of low shrubs with two species in Tasmania. He collected the type specimens of species in about 50 genera including the well-known *Eucryphia lucida* (leatherwood) and *Phyllocladus asplenifolius* (celery top pine). (both planted in the Tasmanian part of the Rain Forest Gully) and named *Exocarpos cupessiformis* (native cherry) and the tree fern *Dicksonia antarctica*..

Key points

One of the founders of botany, zoology and ethnography in Australia. In 1804-1807 he published *Novae Hollandiae Plantarum Specimen*, the most comprehensive account of the Australian flora to that time.

He has the distinction of naming the flora emblems of Tasmania (*Eucalyptus globulus*), Victoria (*Epacris impressa*) as well as the genus *Anigozanthus* to which the floral emblem (kangaroo paw) of Western Australia belongs

His observations and writing about Tasmanian aborigines are a particularly important source of ethnographic recording of a people that are no more.

Labillardière was also the first person to study lichens in Australia, spiders in New Caledonia, make observations on tree frogs, bird respiration and the sex life of the praying mantis.

Background information

Labillardière was born in Alençon, Normandy, France, in 1755, 9th of 14 children. His father was a lace merchant and mother a lace maker. He died in Paris in 1834.

Studied medicine and botany; travelled widely in the Middle East and Europe, including England, where he met, and later corresponded with, botanists Joseph Banks and James E. Smith.

In 1791-1794 he was naturalist on the expedition commanded by Bruni d'Entrecasteaux (*Recherche* and *Espérance*) which visited Tasmania and south-western Western Australia while in search of the missing explorer La Perouse. He collected some 4000 plants specimens on the voyage. These were confiscated in Java by the Dutch and later captured from a Dutch ship by the English and sent to England. Sir Joseph Banks eventually arranged for them to be returned to Labillardière.

