

Mt Canobolas

Mt Canobolas is the highest point between Sydney and Perth, it is 500 metres higher than the surrounding area and its highest point is the peak of Old Man Canobolas at 1396 metres above sea level. Mt Canobolas' main period of volcanic activity was between 13-11 million years ago. Now a State Conservation Area and a National Park, Mt Canobolas is the regions most significant natural and environmental site.

The conservation area faces threats from weeds, non-indigenous animals (pigs, foxes, goats and rabbits), fire and urban development. The National Parks and Wildlife Service manages these threats through a [plan of management](#) that seeks to control populations of non-indigenous animals and reduce weed growth.



Senators on Canobolas, Orange, 1902

Image courtesy of the National Library of Australia, nla.pic-an24573834



INDIGENOUS SIGNIFICANCE

As a Wiradjuri ceremonial site Mt Canobolas was used for the sharing of tucker, corroborees, and ceremonies relating to men's and women's business.

Mt Canobolas is derived from the Wiradjuri word meaning 'two shoulders' (*coona*, shoulder; *booloo*, two, pronounced *Ghannabulla*). *Ghannabulla* is a place of spiritual connection through worship of Baiame (the Creator God and Sky Father) and through the dreaming story of Ghannabulla as one of three feuding brothers.

Initiation ceremonies (*burbung*) were once held on Mt Canobolas and scatters of stone tools and engravings can be found near the Old Man Canobolas peak. Initiation ceremonies many have continued on the site as late as the 1930s and Mt Canobolas remains an important site of traditional knowledge and significance to the Wiradjuri people.

Question to ask students: Why do you think Wiradjuri people might have gathered on Mt Canobolas?

BIAMI, BY OODGEROO NOONUCCAL
TEXT FROM [AUSTRALIAN POETRY LIBRARY](#)

'Mother, what is that one sea,
Sometimes blue or green or yellow?'
'That Biami's waterhole.
He big fellow.'
'Mother, what make sunset fire,
Every night the big red glare?'
'Biami's gunya out that way,
That his camp fire over there'
'How come great wide river here,
Where we swim and fish with spear?'
'Biami dug him.
You see big hills all about?
They the stuff that he chuck out.'

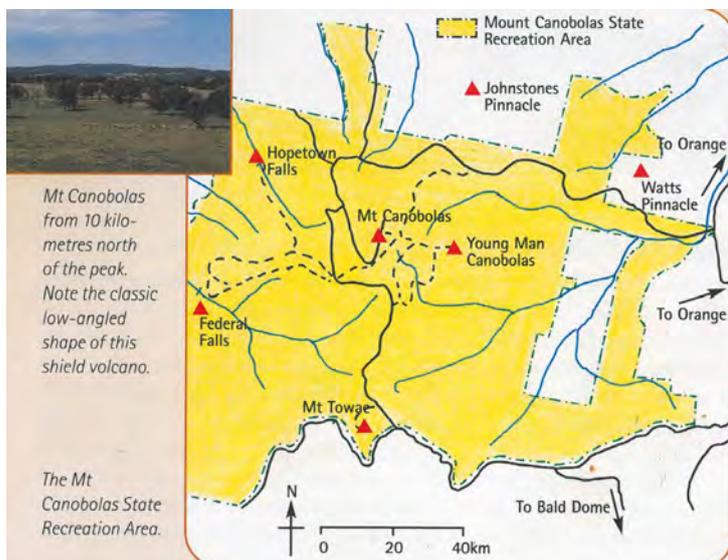


VOLCANIC PAST

Mt Canobolas' main period of volcanic activity was 13-11 million years ago. Eruptions occurred from over 50 vents not just the two peaks you can clearly see on the mountain today. Magma when reaching the surface became lava which cooled to form igneous rocks. The main type of igneous rock found at Canobolas is basalt. During last eruption basalt flowed out of mountain like water, 50 km in every direction.

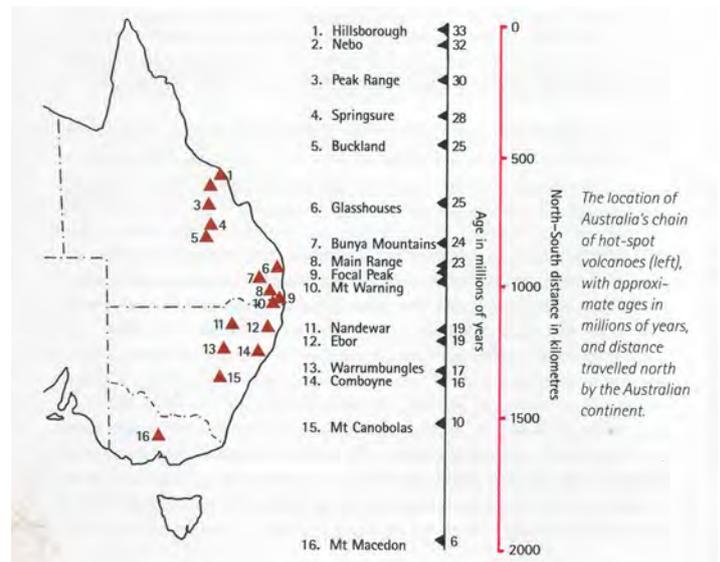
Basalt is not the only type of rock to have formed from the lava at Mt Canobolas – you can also find trachyte, rhyolite and obsidian. The basalt created by the lava has broken up over millions of years forming the soil that is excellent for fruit growing and wine production in the Orange region.

Mt Canobolas is a 'hot spot' volcano which means that continuous plumes of magma from Earth's mantle (layer under the Earth's crust) rise to the surface creating a 'hot spot'. As tectonic plates drift over the specific hot spots volcanoes are created. Hot spot volcanoes do not occur at the boundaries of tectonic plates. A chain of hot spot volcanoes lie over the eastern part of Australia, forming as the continent drifted northwards. The plate that Australia in part of has moved 600 km north in the last 11 million years which means the 'hot spot' in the mantle that created Mt Canobolas is now somewhere in the Bass Strait between Tasmania and Victoria.



Mt Canobolas State Conservation Area showing other volcanic peaks.

Source: *Australia's Volcanoes*, Russell Ferrett, 2005, Reed New Holland, pg 106



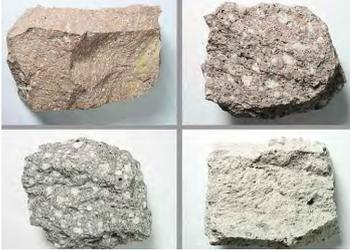
Chain of hot spot volcanoes in Australia

Source: *Australia's Volcanoes*, Russell Ferrett, 2005, Reed New Holland, pg 16



LOCAL GEOLOGY

Copies of activity card can be found in the resources section

Rock Type	Description	In the Classroom
<p>Rhyolite</p> 	<p>Rhyolite is a fine-grained igneous rock. Rhyolites contain crystals that are often too small to see. Usually pink or gray in color. Rhyolites form from magma that has slightly cooled before reaching the surface, the magma has cooled before becoming lava creating Rhyolite.</p>	<p>Using the classification cards in the resources section connect a rock type with the image. Descriptions and image cards in resource section. Use this page for answers.</p>
<p>Trachyte</p> 	<p>A fine-grained igneous rock. Often light coloured and containing distinct crystals that make the rock coarse to touch.</p>	
<p>Obsidian</p> 	<p>Obsidian is an igneous rock that forms when molten lava cools so quickly that it is unable to form rock types. The result is a volcanic glass with a smooth surface. Black is the most common colour of obsidian. It can also be brown, tan, or green.</p>	
<p>Basalt</p> 	<p>Basalt is a dark-colored, igneous rock. Basalt covers more of Earth's surface than any other rock. Smooth to the touch with no crystals.</p>	
<p>Tuffs</p> 	<p>An igneous rock made of volcanic ash. Following an eruption it is compacted into a solid rock. A soft rock containing large crystals. Can be a variety of colours.</p>	
<p>Andesite</p> 	<p>Andesite is the name used for a family of igneous rocks that are usually light to dark gray in color. Andesite usually does not contain any crystals.</p>	

Images from geology.com. Examples of rock types not specimens from Mt Canobolas.



FLORILEGIUM - FLORA OF MT CANOBOLAS

The flora listed below can be found on Mt Canobolas. Please use this information as required to support teaching. All photographs (c) Helmut Berndt.

Flora	Description
<p><i>Eucalyptus pauciflora</i> Snow Gum, White Sallee/Sally, Cabbage Gum, Weeping Gum, Ghost Gum</p> 	<p>Moderate to large tree growing to 30 metres tall, often with a crooked trunk and branching from ground level. Bark is smooth and white to light-grey and yellow, or sometimes pinkish-brown, shedding in patches or strips to give a mottled appearance. It is often marked by 'scribbles' from insect larvae.</p> <p>Leaves are glossy, thick and waxy with many oil glands and distinctive veins parallel to the midrib. Profuse white to cream flowers cover the trees from October to February. Native to habitats in in the Snowy Mountains, along the tablelands in southern New South Wales and the Australian Capital Territory, through to Victorian and Tasmania. It is one of the most common trees on Mt Canobolas.</p>
<p><i>Eucalyptus canobolensis</i> Silver-leaf Candlebark, Mt Canobolas Candlebark</p> 	<p>Tree 8-12 m high, rarely to 18 m. Newly formed bark is smooth, brilliant white before turning off-white or greyish, becoming pink or reddish in late summer/early autumn. Adult leaves are lance-shaped, 10-18 cm long, 1.5-3.5 cm wide, dull-green or grey-green.</p> <p>The flower heads occur in threes, with a distinctly flattened stalk. Flowers in January –March. Grows in woodland vegetation, in Southern Tableland Wet Sclerophyll Forest, confined to upper slopes of Mt Canobolas. Found chiefly between 1100-1300 m in the Mt Canobolas State Recreation Area. Conservation status in New South Wales: Vulnerable and commonwealth status: Endangered. High risk of extinction due to restricted distribution.</p>
<p><i>Thelymitra peniculata</i></p> 	<p>Thelymitra is a genus of about 80 species of orchids distributed throughout Australia, New Zealand and islands to the north of Australia. They are known as 'sun orchids' because the flowers of most species only open fully on warm, sunny days. Found in New South Wales and Victoria.</p>



Flora	Description
<p><i>Stypantra glauca</i> Nodding Blue Lily</p> <p><i>Stypantra</i>: from the Greek 'stypē' for flax fibres and 'aner' for man, in reference to the staminal filament hairs which are beard like in appearance. <i>Glauca</i>: from the Greek 'glaukos' meaning sea green which refers to the colour of the foliage.</p> 	<p>Although it has the appearance of a shrub it is actually a multi-stemmed herb growing to 1m at the base, aerial stems often flowering when 30 cm high. Lily-like flowers droop from slender stalks. The flowers, usually blue or occasionally white, and have bearded yellow stamens. Flowering occurs in early spring. Widespread in forest and woodland, from south-east Queensland especially in eastern half of New South Wales and Victoria, and in the south west of Western Australia.</p>
<p><i>Stylidium graminifolium</i> Grass Triggerplant</p> <p><i>Stylidium</i>: from the Greek 'stylos', a column, referring to the united stamens and style. <i>Graminifolium</i>: from Latin 'gramineus', grass like, and folium a leaf.</p> 	<p>Stylidium – known as trigger plants because of the unique, irritable flower column which is triggered by insect visitors. The trigger remains cocked until an insect probes the flower and then springs upwards and deposits pollen on the head or back of the insect which transfers the pollen to another flower.</p> <p>Tufted grass-like plant with leaves from 6-20 cm long. Small pale to bright pink flowers about 10mm in diameter, occur on stalks up to 40 cm high from the centre of the grassy clump, flowering between August to January. Grows in dry forest; widespread from coast to alpine areas of eastern states.</p>
<p><i>Calytrix tetragona</i> Common Fringe Myrtle</p> <p><i>Calytrix</i>: from two Greek words meaning 'calyx' and hair, alluding to the long fine calyx tips. <i>Tetragona</i>: four-sided, relating to the leaf cross-section.</p> 	<p>Small to medium shrub up to 2 m high and 1.5 m in width with star-like flowers ranging in colour from white through yellow, pink and purple to red. The tiny leaves are slightly fleshy with a spicy perfume when bruised. Widespread and throughout temperate Australia as a dwarf to tall shrub. Grows in heath, woodland and dry forest widespread.</p>



Flora	Description
<p><i>Kunzea parvifolia</i> Small-leaved kunzea</p> <p><i>Kunzea</i>: after Dr Gustav Kunze. <i>Parvifolia</i>: from Latin 'parvus', small and folium, a leaf.</p> 	<p>Small pink to mauve flowers are clustered into globular-shaped heads at the ends of the branches and are very profuse and conspicuous. The flowers are followed by small one-celled fruits which release numerous small seeds when ripe.</p> <p>Profuse purplish-ink flowers from October to December. Grows in heath and dry forest, south from Torrington and inland to Dubbo district and the Warrumbungle National Park.</p>
<p><i>Mt Canobolas Xanthoparmelia Lichen Community</i> is the name given to the community of foliose lichens of the genus <i>Xanthoparmelia</i> that occurs at Mt Canobolas in central-western NSW, by the Scientific Committee of the NSW Office of the Environment.</p> 	<p>The Mt Canobolas Xanthoparmelia Lichen Community includes: <i>Cadia fuliginosa</i>, <i>Xanthoparmelia canobolasensis</i>, <i>Xanthoparmelia digiformis</i>, <i>Xanthoparmelia metaclystoides</i>, <i>Xanthoparmelia metastrigosa</i>, <i>Xanthoparmelia multipartite</i>, <i>Xanthoparmelia neorimalis</i>, <i>Xanthoparmelia sulcifera</i>, <i>Xanthoparmelia tasmanica</i></p> <p><i>Xanthoparmelia canobolasensis</i> and <i>Xanthoparmelia metastrigosa</i> are known only from Mt Canobolas, and <i>X. sulcifera</i> and <i>C. fuliginosa</i> are each known from only one other locality in NSW. Mt Canobolas <i>Xanthoparmelia</i> Lichen Community occurs on rock faces and soils of the Mt Canobolas Tertiary volcanic complex.</p> <p>Mt Canobolas Xanthoparmelia Lichen Community is threatened by road and drainage works, and collection of bushrock. Tourist visitation of the slopes and summit of Mt Canobolas increases risks of trampling and disturbance to the community. There is also potential for loss of lichen habitat from increased urban encroachment and rural development such as vineyards and orchards on the north and east flanks of Mt Canobolas.</p> <p>The Mt Canobolas Xanthoparmelia Lichen Community is likely to become extinct in nature in New South Wales unless the circumstances and factors threatening its survival cease.</p>



Flora	Description
<p><i>Phebalium squamulosum</i> Scaly Phebalium, Forest Phebalium</p> 	<p>Shrub to slender tree, 1-7 m high; stems with rusty scales, becoming glabrous, smooth or rarely warty. Pale to bright yellow on inside and with rusty or silvery scales on outside. Flowering mainly in early spring and producing clusters of a dozen or more of small, star-like flowers in the cream to bright yellow range. Found in open forests and woodlands of south-east and north-east Queensland, eastern New South Wales and eastern Victoria.</p>
<p>Mountain mirbelia</p> 	<p>Flowers in summer in orange-yellow and red, keel rusty to purplish red, colours. Grows in dry forest, chiefly at higher altitudes south from Wingello, also at Mt Kaputar National Park and Mt Canobolas.</p>
<p><i>Hibbertia obtusifolia</i> Hoary Guinea Flower</p> 	<p>Flowers in short shoots or axillary, in yellow. Flowering spring to summer. This is an extremely variable species. Widespread on sandy or gravelly soils.</p>
<p><i>Diuris sulphurea</i> Tiger Orchid, Hornet Orchid</p> 	<p>Flowering September-December. The flower stems bear one to five flowers, which are predominantly yellow. It is sulphur- yellow, with a pair of conspicuous brown spots near the base. Grows in Grasslands, heaths and open forests; widespread in Queensland, New South Wales, Victoria, South Australia and Tasmania.</p>



Flora	Description
<p><i>Diuris semilunulata</i></p> 	<p>A terrestrial herb flowering October to December. Flowers orange, heavily blotched and suffused with brown and purple. Grows in forest; south from Nerri-ga, New South Wales to Victoria.</p>
<p><i>Chiloglottis valida</i> Large Bird Orchid</p> 	<p>Terrestrial herb. This orchid bears its flowers very close to the ground, but the stem elongates in the fruiting stage. The name bird-orchid relates to the open flowers resembling baby birds in a nest with open beaks waiting to be fed. Flower broad, 35 mm across, greenish to purplish red. Grows in grassy forest, particularly common in montane and sub-alpine regions, occurs south of the Brindabella Ranges, New South Wales and Victoria.</p>
<p><i>Bulbine bulbosa</i></p> <p>Bulbine Lily, Wild Onion, Golden Lily, Leek Lily, Yellow Onion Weed, Native Leek</p> <p><i>Bulbine</i>: translated from Latin this means 'bulbous' referring to the bulb-shaped tuber of many members of this genus.</p> <p><i>Bulbosa</i>: a Latin word derived from 'bulbus' meaning 'bulb', though the species does not have a true bulb.</p>	<p><i>Bulbine bulbosa</i> is a densely tufted perennial herb reaching 75 cm, in the wild, plants are found growing in conspicuous colonies. The green-grey leaves are succulent, growing to 40 cm. The bright yellow fragrant star-like flowers are approximately 2 cm wide and are borne on simple racemes of up to 50 flowers. Each flower lasts for just one day, with one to several opening at a time. Flowering occurs from September to March with some geographic variation. <i>Bulbine bulbosa</i> extends through temperate Australia from central Queensland to Tasmania and South Australia.</p>



Flora	Description
<p><i>Bulbine glauca</i> Rock Lily</p> <p><i>Bulbine</i>: Latin word which means bulb. <i>Glauca</i>: Latin word meaning bluish-grey, relating to leaf colour.</p> 	<p><i>Bulbine glauca</i> is a tufted perennial that grows to a height of about 50 cm, with thick and fleshy roots. Each plant has about six to 16 leaves. The flowers are borne on spikes, known as inflorescences, which in the wild usually develop after rain. The plant produces two or more inflorescences, with small, yellow, star-shaped flowers, which are faintly scented. The flowers can begin to open in spring and sometimes continue right throughout to autumn if the weather conditions are right and the plant receives regular water throughout the hot months. The distribution of <i>Bulbine glauca</i> is in New South Wales, Victoria, Tasmania and possibly into Queensland.</p>
<p><i>Pultenaea spinosa</i> Spiny Bush-pea, Grey Bush-pea</p> 	<p>Shrub with yellow-orange flowers and green-brown leaves. Grow in dry forests on sandy or rocky soil, widespread west to Warrumbungle Mountains.</p>
<p><i>Pultenaea setulosa</i> Stony Bush-pea</p> 	<p>Shrub with orange-red flowers and green-brown leaves. Grows in dry forest; west to Gilgandra district.</p>
<p><i>Pultenaea polifolia</i> Dusky Bush-pea</p> 	<p>Shrub with colourful purple and orange flowers, fur like to touch, dark green leaves. Grows in heath to wet forest on swampy to well-drained sites, south from New England.</p>
<p><i>Pimelea ligustrina</i> Tall Rice Flower</p> 	<p>Commonly known as tall rice-flower, is a shrub species in the family Thymelaeaceae. Growing to between 1 and 3 metres in height. Flowers are clustered in groups. These are followed by green to red-brown fruit. Widespread in forest s below 1400 m altitude.</p>



ADDITIONAL RESOURCES

- National Parks and Wildlife Service, <http://www.nationalparks.nsw.gov.au/visit-a-park/parks/Mount-Canobolas-State-Conservation-Area>
- Mt Canobolas State Conservation Area Plan of Management, <http://www.environment.nsw.gov.au/resources/planmanagement/final/mtcanobolas.pdf>
- Vegetation and floristics of Mount Canobolas State Recreation Area, Orange, New South Wales, John T. Hunter, <http://www.orangemuseum.com.au/wp-content/uploads/2017/01/Article-Vegetation-of-Mt-Canobolas-John-T-Hunter.pdf>
- Australian Volcanoes, Russell Ferrett, 2005, Reed New Holland, Available at Orange City Library
- Orange Aboriginal Heritage Report, 2012, <http://www.orangemuseum.com.au/wp-content/uploads/2013/08/Orange-Aboriginal-Heritage-Report2012.pdf>



Resources

This section contains all source material and activity resources.

All photos, images and maps can only be used for educational purposes.

Please contact Orange Regional Museum if you have any questions.

E: museum@orange.nsw.gov.au P: 02 6393 8444



RHYOLITE

Rhyolite is a fine-grained igneous rock. Rhyolites contain crystals that are often too small to see. Usually pink or gray in color. Rhyolites form from magma that has slightly cooled before reaching the surface, the magma has cooled before becoming lava creating Rhyolite.

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TRACHYTE

A fine-grained igneous rock. Often light coloured and containing distinct crystals that make the rock coarse to touch.

ORANGE REGIONAL MUSEUM

OBSIDIAN

Obsidian is an igneous rock that forms when molten lava cools so quickly that it is unable to form rock types. The result is a volcanic glass with a smooth surface. Black is the most common colour of obsidian. It can also be brown, tan, or green.

ORANGE REGIONAL MUSEUM

BASALT

Basalt is a dark-colored, igneous rock. Basalt covers more of Earth's surface than any other rock. Smooth to the touch with no crystals.

ORANGE REGIONAL MUSEUM

TUFFS

An igneous rock made of volcanic ash. Following an eruption it is compacted into a solid rock. A soft rock containing large crystals. Can be a variety of colours.

ORANGE REGIONAL MUSEUM



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ANDESITE

Andesite is the name used for a family of igneous rocks that are usually light to dark gray in color. Andesite usually does not contain any crystals.

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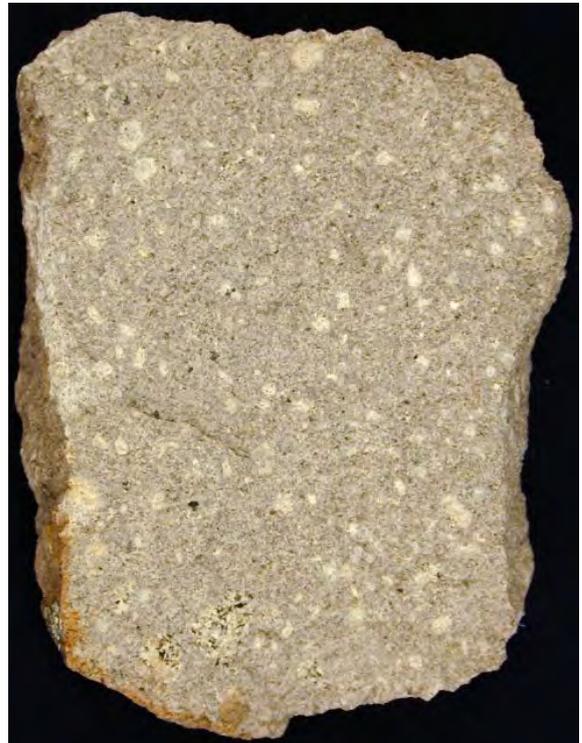
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