

Plant in Focus, May 2018
Xanthorrhoea Grasstree



Left: *Xanthorrhoea australis*, Right: *Xanthorrhoea* sp. 21st Century Garden, GBG. Photos: L: TB, R: DJ

Xanthorrhoea is a small genus of evergreen, tufted or tree-like perennial flowering plants consisting of 28 species all of which are endemic to Australia. It is the only member of the subfamily Xanthorrhoeaceae in the family Asphodelaceae. They are very significant and interesting plants that are ancient, hardy, long lived and which flourish in nutrient rich to poor soils. They are mainly found in temperate regions and a limited number occur in subtropical and tropical zones. There are smaller populations in remnant woodlands in desert regions. One species *X. thorntonii* is confined to Central Australia. Hybridisation occurs to a limited degree in the wild. They are quintessentially Australian and are a striking feature in the landscape.

The genus name is derived from Greek xanthos 'yellow' and rheo 'to flow' in reference to the yellow resin. The common names for *Xanthorrhoea* include Grasstree, Grass gum-tree (resin yielding) and Kangaroo tail. The association with resin is the common name 'Yacca' which was most likely borrowed from one of the languages around the Adelaide region where 'yaku' or 'yakko' was recorded as 'resin'. In the recent past Grasstrees were widely known as 'Blackboys' because of their blackened bases and dry flower spikes which gave the impression of Aboriginal warriors bearing spears.

Description

Xanthorrhoeas are monocots. Stems are tree-like or subterranean, sometimes branched, woody, often blacked by fire, densely covered in persistent old leaf bases stacked on top of each other and stuck together by a naturally occurring resin; Leaves narrowly linear, many, forming terminal crown, somewhat flexible to very flexible, spreading to erect or arched and often reflexed at the broad base, variable in cross section, mainly smooth; Inflorescence usually erect or sometimes ascending scape with a many-flowered cylindrical spike;



Map on page 5

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Flowers bisexual, subtended by persistent bracts, spirally arranged, usually strong honey fragrance; Sepals 3, free; Petals 3, free; Stamens exserted; Fruit a 3-celled woody capsule.

The smallest species grow to about 1 metre whilst others reach 6 metres. *Xanthorrhoea* plants are slow to extremely slow -growing and mature specimens with trunks of 2-6 metres tall can be hundreds of years old. It is estimated that the trunks of most species may grow only 1-2cm per year. In species with a trunk, this trunk may take over 20 years to develop. Dimensions of any given species are for mature plants and include the scape (stem of inflorescence) and the floral spikes.

Fire

The living leaves may form hemispherical crowns although some can be nearly spherical. The old or dead leaves often form skirts around the trunks and in some species such as *X. australis* the skirts can reach the ground. The length of the skirt is a good indication of the time since the last fire — the longer the skirt, the longer the duration without fire.

The skirts of dead leaves are highly inflammable, though in most cases plants are able to survive the hottest of bushfires. A fire may burn their leaves and blacken their trunks, but usually stimulates flowering and around 4-9 months after a fire the display of tall white to cream candle-like spikes provide a nectar rich fragrant feast that attracts huge numbers of pollinators, from insects to honeyeaters. Not all species need to be burnt in order to flower freely eg. *X. johnsonii*. Not all species are fire-tolerant: the threatened Grey Grass Tree (*X. glauca subsp. angustifolia*), in Victoria, is killed by hot fires.

Growing downwards

Another interesting feature of the *Xanthorrhoea* occurs below the soil surface. When developing from seedlings the base of the plant is pulled slowly below the soil level. The base roots of the stem from where the leaves develop contract and this in turn pulls the base of the plant further below the soil surface. Surrounding the root system are microbes called mycorrhiza (fungus). This symbiotic relationship helps the plant take up nutrients. Some *Xanthorrhoea* species develop their trunks completely below soil level and also branching can occur below the surface.

Traditional Uses

Australian Aboriginal people had many traditional uses for *Xanthorrhoea* species. Every part of the plant was used for food or as a tool. The leaf bases, sweet and with a nutty taste as well as the heart of the stem are edible. The nectar on the flower spike was collected with a sponge made from the bark of certain species of eucalyptus - the 'stringybarks'. The floral stalk often contains large beetle larvae which were eaten.



Xanthorrhoea flowers. Photo: DJ



Xanthorrhoea leaf bases varnished with gum. Nutrients are transport via aerial roots running down the centre. Photo: Hesperian, wikimedia CC-BY-SA-3.0



Xanthorrhoea sp. stalk after flowering. GBG
Photo: DJ



Xanthorrhoea latifolia subsp. *maxima* stalk showing the woody seed capsules.
Photo: John Tann, Flickr
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A long stalk could be used as a torch for hunting or a smaller stalk could serve as a spear. The resin was used as an adhesive-attaching wooden handles to stone hatchet heads and knife blades. The leaves were used to cut meat.

The *Xanthorrhoea* also played a significant cultural role apart from a practical use. In South Australia it was tradition that the souls of the newly unborn would hover among the Grasstrees awaiting for the hour of their conception. The Grasstrees also played a prominent role in a Creation fire myth.

European Uses

Fresh and dried leaves are harvested for the floral trade. Many features of the *Xanthorrhoea* such as the spikes and opened seed capsules are used as features in arrangements and design. The resin can be polished and incorporated into jewellery. The hard and often dark coloured trunk-wood is highly prized by woodturners.

Prior to the arrival of plastic and acrylic compounds the resin was used for varnish manufacture; stove polishing, soap making, perfumery, in early gramophone record manufacture and as church incense.

Threats

Populations of many species of *Xanthorrhoea* have been devastated by *Phytophthora cinnamomi* Cinnamon fungus. Water spreads the fungus spores and it thrives where there is much moisture. This fungus rots the roots of grass trees and causes dieback. The disease caused by this introduced plant root pathogen has had a devastating and deadly effect on many *Xanthorrhoea* species. Further threats include: land clearance for agriculture and urban development; inappropriate burning; overharvesting of foliage and illegal removal of the plants from their natural environment for sale as garden plants.

All *Xanthorrhoea* species are protected in the wild and although mature plants are commercially available they must have a tag stating that they have been harvested under licence.

The Australian Government threatened plant list shows the two Tasmanian species: *Xanthorrhoea bracteata* Shiny Grasstree (Endangered) and *Xanthorrhoea arenaria* Sand Grasstree (Vulnerable). The Victorian Government rare and threatened plant list shows the three species: *Xanthorrhoea caespitosa* Tufted Grass-tree (Rare in Vic.), *Xanthorrhoea glauca* subsp. *angustifolia* Grey Grass-tree (Endangered), *Xanthorrhoea semiplana* subsp. *semiplana* Yacca (Rare in Vic.)

Cultivation

Xanthorrhoea can be cultivated, as seed is easily collected and germinated. They do grow slowly, however quite attractive plants with short trunks (10cm) and leaf crowns up to 1.5m (to the top of the leaves) can be achieved in 10 years. The slow growth rate means that it may take 30 years to achieve a specimen with a significant trunk and many more to reach its full height. There is a very low survival rate of established *Xanthorrhoea* plants purchased from garden nurseries. They may take 3-4 years to die. The most successful examples of transplanting have been where a substantial amount of original soil (>1 cubic metre) has been taken with the plant. Plants like well drained soil and full sun.



Xanthorrhoea malacophylla
just outside GBG. Photo: TB

Colin Campbell from Gardening Australia in 2006 gave a recipe (which he had received from some old codger): Take a cup of brown sugar place in a bucket of water and water your Grasstrees once a month for 2 years with that mixture. The sugar feeds the mycorrhiza and thus initiates nutrient intake and thus helps survival of the Grasstree.

An Iconic Xanthorrhoea, Geelong Botanic Gardens

Xanthorrhoea malacophylla: This tall and slender Grasstree is located just outside the northern corner of the garden and is well supported by a brace. It was translocated from a site further out in Eastern Park to its current position in 2002. The tree had a considerable lean and hence the metal brace was designed to remedy this flaw. The specimen is believed to have been acquired by John Raddenbury in the 1890's. It was most likely acquired at the same time as those received at the RBG Melbourne. It has therefore survived two translocations, the initial being from its natural habitat. It is believed to be a natural hybrid and is purported to be at least 500 years old although it could be much older. I have heard 800 years old.

Care for the plant includes watering approximately once per month with 600 litres of water that is trapped by the surrounding swale. Despite some apprehension by Jane Edmonson Gardening Australia (Fact Sheet : 21st Century Garden, 24/03/2007) about its tragic look, believing that the specimen has suffered from its translocation the *X. malacophylla* has responded extremely well to prayers, plenty of TLC and water and well drained soil.

Description *Xanthorrhoea malacophylla* (soft leaves): New South Wales; 3.5-8.5m x 2-3m. Usually grows in moist or wet sclerophyll forest or on rainforest margins, on steep rocky hillsides; coastal ranges from Wyong to Casino; Small to tall tree-like perennial; trunk usually 2-6m tall, often branched with 1-10 crowns of foliage; leaves to about 1.5m long, linear, 4-angled, slightly rhombic in cross-section, soft, spongy, in an erect tuft when new, becoming reflexed with age, bright green; scapes 1.3-1.8m x 2.3cm; spikes 1.1-1.8m x 3.5cm; cluster-bracts more prominent near base, nearly glabrous to fringed; packing-bracts and sepals dark brown; flowers cream; petals recurved.

Soft leaved and distinctive, the mature plant of this species have very tall trunks with upper branching and bright green leaves which are usually spongy and soft. Packing bracts and outer sepals are dark brown. The flowers appear between May and September.

Plants are cultivated to a limited degree and evidently suitable for subtropical and temperate regions. Plants require acidic and well drained soil and a moderately sunny or semi-shaded aspect. Propagate from seed.



Xanthorrhoea malacophylla trunk. Near GBG. Photos: TB

This information was prepared
by Tilly Brunton
Volunteer Guide
Friends of
Geelong Botanic Gardens



Top: *Xanthorrhoea johnsonii*
 Lower: *Xanthorrhoea australis*.
 GBG. Photos: TB

Summary

Family: Asphodelaceae (includes *Aloe*, *Kniphofia* and *Phorium*)
 Subfamily Xanthorrhoeoideae
 Genus: *Xanthorrhoea*
 Species: various
 Locations in GBG: See locations on the map.

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