

Bloedel Plant Profile – The Tasmanian Tree Fern (*Dicksonia antarctica*)



Tree ferns are ancient plants. Fossils of them date from the start of the Jurassic era, 200 million years ago.¹ They were once snack food for dinosaurs!

Most tree trunks are living, with water and nutrients flowing through them. In tree ferns, the ‘trunk’ is just aerial roots and dead fronds through which the roots can grow. The trunk supports the living part of the plant at the top. It does not have roots below ground feeding the plant. Cutting most trees at the base will kill the top of the tree; some re-sprout from the base. With a tree fern, as long as the living top gets moisture, it can survive.

This odd nature of tree ferns led to some of them in the 19th century surviving a trip to England. An empty ship is less stable than one with ballast in the hold. Some ships sailing from Australia to England used tree fern trunks as ballast. They were a cheap way of adding weight to the ship. It was a surprise to see fronds regrowing at the end of the journey.² Tree ferns can grow in the warmest parts of England unprotected, mainly in Cornwall. Elsewhere they may survive if sheltered in cold weather. The same is true in British Columbia. Tree ferns at VanDusen Garden in winter are dressed in little ‘haystack’ coats of straw to keep them warm. Those in Bloedel Conservatory are warm enough to survive without them.



As the trunks develop by the build up of old fronds and roots, tree ferns gradually get taller but not wider, unlike most trees which get thicker with age. Tree ferns grow quite slowly, with a Tasmanian tree fern typically growing around 3 cm a year. This means that one 1.8 m tall is about 60 years old.³ Their very slow growth means that most large ones sold come from the wild. A legally sourced plant should have a ‘place of origin’ and a ‘traceable number’.⁴

¹ <https://steurh.home.xs4all.nl/engevovar/eevovar2.html>

² http://www.caerhays.com/page.cfm?page=Australasian_plants

³ <http://www.tasmanianarboretum.org.au/thematic/ferns.shtml>

⁴ <https://frustratedgardener.com/2014/05/11/plant-portraits-dicksonia-antarctica/>

When most trees die, to replace them, you have to plant a new one and wait. The odd structure of tree ferns, where the base is dead; means that it is possible to ‘cheat’. If a new young plant is put on top of an old dead trunk, the new one will grow into the old and have ‘instantly’ gained many years of growth!⁵

Bloedel Conservatory has two trunks labelled ‘Tasmanian Tree Fern *Dicksonia antarctica*’. They are on the left after crossing the bridge, in front of the Brazilian Jelly Palm. One has a *Dicksonia antarctica*; the other has a different fern on top. It has fresh green roots growing around the *Dicksonia antarctica* trunk. Its thick strap-like fronds are unlike the multiply-branching fronds of the *Dicksonia antarctica*.



The study of fern leaves has given a new efficient means of energy storage for solar cells. It may be up to 30 times better than before. It is an example of the use of ‘biomimicry’.⁶ This copies the best designs in nature and uses them to solve other problems.⁷



⁵ <https://www.theguardian.com/lifeandstyle/2018/apr/29/the-springtime-miracle-of-the-fuzzy-tree-fern-james-wong>

⁶ <https://www.energymatters.com.au/renewable-news/fern-supercapacitor-solar-em5978/>

⁷ <http://bioneers.org/biomimicry-what-would-nature-do-here-ze0z1801/>



As it opens, the side branches, and their side branches, uncurl as unravelling spirals.



Details on a 'trunk' showing it is made of the remnants of old fronds and dead roots.

Tasmanian Tree Fern Statistics

Wild plants in Tasmania and South Eastern Australia are evergreen. When grown in cooler climates, they are deciduous. Statistics relating to Tasmanian tree ferns depend upon where they grow. The smaller values below^{8&9} refer to plants grown in cool regions; the (larger ones) apply to native populations in Tasmania and mainland Australia.¹⁰

Lifespan	400 years (to 1000 years)
Ultimate height	2.5-4 metres (to 12 metres)
Ultimate spread	2.5-4 metres (to 6 metres ¹¹)
Time to ultimate height	20-50 years
Starts to produce spores	20-23 years ≈ 95 cm high
Spores per frond per year	750 million
Distance spores may travel	(500-800 km)
Population in Tasmania	≈ 130 million trunks ¹²

The Latin part of the plant name, 'Dicksonia', honours James Dickinson (1738-1822). He was a British nurseryman and a friend of Sir Joseph Banks (1743-1820). Banks was with Captain James Cook on his first visit to Australia on HMS Endeavour. The name 'antarctica' misleads, as it merely implies 'southern and cooler' as opposed to the tropics. It does not mean that they are from Antarctica. There is no fossil record of Tasmanian tree ferns in Antarctica.

⁸ <https://www.directgardening.com/89-perennials/3259-tasmanian-tree-fern#/quantity-1>

⁹ <https://www.rhs.org.uk/plants/details?plantid=654>

¹⁰ [Click this link to open or download a pdf from the Tasmanian Government](#)

¹¹ <http://www.plantsrescue.com/tag/dicksonia-antarctica/>

¹² [Click this link to open or download a pdf from the Forest Practices Authority: Flora Technical Note No. 5](#)