



Plants of

'Grasstrees':

A photographic guide

Part 3: Ferns

Ross McKenzie

To the natural philosopher there is no natural object unimportant or trifling ... a soap bubble ...an apple ... a pebble ... He walks in the midst of wonders.

John Herschel (1792-1871): *A Preliminary Discourse
on the Study of Natural Philosophy* (1830)

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About the author

Dr Ross A. McKenzie PSM BVSc (Hons) MVSc DVSc (1949 –) is a retired veterinary pathologist and toxicologist who worked in the Queensland Department of Primary Industries during 1973-2009 and taught toxicology to veterinary students at the University of Queensland during 1994-2008. He is also an amateur botanist and photographer. In retirement, Ross wrote and illustrated the definitive 976-page *Australia's Poisonous Plants, Fungi and Cyanobacteria: A Guide to Species of Medical and Veterinary Importance*, published by CSIRO Publishing in 2012, as a plain-language tool for understanding and preventing poisonings by natural toxicants – ‘natural’ does not mean ‘harmless’. His interests include natural history, bush-walking, gardening with Australian native plants and photography of landscape and Australian native flora. As a member of the Society for Growing Australian Plants (now Native Plants Queensland), the Queensland Naturalists’ Club and privately with his botanical artist wife Glenyth, he has travelled widely throughout Australia, visiting all states and crossing the continent by road east-west and return several times.

Notice to Guests

This guide is not comprehensive. It covers the plants identified so far on *Grasstrees*. If you come across a plant that is flowering or fruiting and it is not included in this guide, please notify Trish or John Stadtmiller so that it can be investigated and hopefully included in a later edition. Thank you. I hope you enjoy your stay!

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Ferns

Ferns (Pteridophytes) have no flowers fruits or seeds. They reproduce through spores that need a moist environment to germinate and produce the final fern plant.

Fern spores are usually brown or black and are produced in protective structures called **sporangia** found on the underside of the fern's leaves (fronds). Most ferns have a hairy creeping stem (**rhizome**) from which grow roots and leaves.

Fern leaf structure:



Ferns vary in size from small fine-leaved plants in moist areas or cracks in the granite rocks of *Grasstrees* to tall ferntrees topping 15 m high and with a canopy spreading to about 4 m wide.

Fern habitats on *Grastrees*:

- **Soil**
 - *Cyathea australis* (rough tree fern)
 - *Pteridium esculentum* (austral bracken)
 - *Calochlaena dubia* (common ground fern, false bracken)
 - *Cheilanthes distans* (bristly cloak fern)
 - *Cheilanthes sieberi* (rock fern)
- **Rock crevices**
 - *Adiantum aethiopicum* (common maiden-hair fern)
 - *Adiantum hispidulum* (rough maiden-hair fern)
 - *Doodia caudata* (small rasp fern)
 - *Davalia pyxidata* (hare's-foot fern)
- **Rock surface**
 - *Platynerium bifurcatum* (elk horn fern)
 - *Pyrrosia rupestris* (rock felt fern)

Ferns in Soil

***Cyathea australis* (rough tree fern) [Cyatheaceae]**

- Trunk to 20m tall
- Fronds 2-3 m long
- Sori circular, 2 rows per leaflet
- Scales on trunk & base of fronds are shiny red-brown, stiff, often twisted, 2-5 cm long



Cyathea australis (rough tree fern): Plant in habitat; photographed on Oxley Highway February 2014



Cyathea australis (rough tree fern): Plant in habitat; photographed on Oxley Highway February 2014



Cyathea australis (rough tree fern): Frond upper surface; photographed on Oxley Highway February 2014



Cyathea australis (rough tree fern): Young plant in habitat



Cyathea australis (rough tree fern): Frond-base scales (identification character)



Cyathea australis (rough tree fern): Sporangia



Cyathea australis (rough tree fern): Sporangia

***Pteridium esculentum* (austral bracken) [Dennstaedtiaceae]**

- Robust leathery fern in open habitats
- End of fronds simple, undivided
- Edge of fronds rolled under (revolute)
- Fertile fronds (fronds with sporangia) are very rare; you are very unlikely to see these



Pteridium esculentum (austral bracken): Plant colony in habitat



Pteridium esculentum (austral bracken): Plant in habitat



Pteridium esculentum (austral bracken): Fronds – note simpler structure towards the frond tip

***Calochlaena dubia* [syn. *Culcita dubia*] (common ground fern, rainbow fern, false bracken) [Dicksoniaceae]**

- More highly-divided leaves than bracken
- Circular spore masses (sori) at edges of leaves



Calochlaena dubia (common ground fern, false bracken): Plant in habitat



Calochlaena dubia (common ground fern, false bracken): Frond— note the complex structure towards the frond tip



Calochlaena dubia (common ground fern, false bracken): Frond – note the complex structure towards the frond tip



Calochlaena dubia (common ground fern, false bracken): Young frond

***Cheilanthes distans* (bristly cloak fern) [Sinopteridaceae]**

- Upright fern
- Small leaves, hairy undersides



Cheilanthes distans (bristly cloak fern): Plant in habitat



Cheilanthes distans (bristly cloak fern): Upper (left) and lower surfaces of fronds; note sporangia and hairs on undersurface; fronds scanned Ashgrove September 2002

Cheilanthes sieberi (rock fern) [Sinopteridaceae]

- Upright fern
- Black or brown stems
- Small non-hairy leaves



Cheilanthes sieberi (rock fern): Plant in habitat



Cheilanthes sieberi (rock fern): Upper (left) and lower surfaces of fronds; note sporangia on undersurface; fronds scanned Ashgrove December 2001

Ferns in Rock Crevices

***Adiantum aethiopicum* (common maiden-hair fern) [Adiantaceae]**

- Small fern in moist areas, rock crevices
- Compound leaves with a fan-like spread of leaflets
- Leaflets with a roughly rectangular outline
- Sporangia round, ranked along one edge of the leaflet underside



Adiantum aethiopicum (common maiden-hair fern): Plant in habitat; photographed at Narrabeen, Sydney
February 2013



Adiantum aethiopicum (common maiden-hair fern): Plant in habitat; photographed at Narrabeen, Sydney
February 2013

***Adiantum hispidulum* (rough maiden-hair fern) [Adiantaceae]**

- Small fern in rock crevices
- Compound leaves with several long frond branchlets, each with a single line of leaflets on either side of the branchlet mid-rib
- Leaflets with a roughly rectangular outline
- Sporangia round, ranked along one edge of the leaflet underside



Adiantum hispidulum (rough maiden-hair fern): Plant in habitat



Adiantum hispidulum (rough maiden-hair fern): Plant in habitat



Adiantum hispidulum (rough maiden-hair fern): Underside of frond branchlet in habitat showing sporangia



Adiantum hispidulum (rough maiden-hair fern): Upper (left) and lower (right) leaflet surfaces

***Doodia caudata* (small rasp fern) [Blechnaceae]**

- Small fern in rock crevices
- Long narrow fronds with roundish leaflets below and elongated leaflets towards the tip
- Spore packets (sori) along both sides of midvein



Doodia caudata (small rasp fern): Plant in habitat



Doodia caudata (small rasp fern): Plant in habitat (in rock crevice with hare's-foot ferns)



Doodia caudata (small rasp fern): Plant in habitat



Doodia caudata (small rasp fern): Infertile fronds



Doodia caudata (small rasp fern): Infertile frond



Doodia caudata (small rasp fern): Underside of fertile frond (frond with sporangia)



Doodia caudata (small rasp fern): Fertile fronds upper and lower surfaces



Doodia caudata (small rasp fern): Sporangia



Doodia caudata (small rasp fern): Sporangia



Doodia caudata (small rasp fern): Sporangia



Doodia caudata (small rasp fern): Botanical specimen extracted from rock crevice – rhizome (left) and fertile fronds (right)

***Davallia pyxidata* (hare's-foot fern) [Davalliaceae]**

- Lithophyte
- Hairy exposed rhizomes
- Stiff fronds
- Spore packets (sori) at ends of leaf lobes



Davallia pyxidata (hare's-foot fern): Plant in habitat



Davallia pyxidata (hare's-foot fern): Plant in habitat



Davallia pyxidata (hare's-foot fern): Plant in habitat



Davallia pyxidata (hare's-foot fern): Fertile frond



Davallia pyxidata (hare's-foot fern): Sporangia

Ferns on Rock Surfaces

Platycerium bifurcatum (elk horn fern) [Polypodiaceae]

- Lithophyte



Platycerium bifurcatum (elk horn fern): Plant in habitat on granite boulder

***Pyrrosia rupestris* (rock felt fern) [Polypodiaceae]**

- Lithophyte
- Fronds of 2 types: rounded sterile & elongated fertile
- Sori (spore packets) over most of the underside of fertile fronds arranged in rows on either side of the midrib



Pyrrosia rupestris (rock felt fern): Plant in habitat on granite boulder



Pyrrosia rupestris (rock felt fern): Plant in habitat



Pyrrosia rupestris (rock felt fern): Plant in habitat – infertile fronds (flat against rock) and fertile fronds (erect)



Pyrrosia rupestris (rock felt fern): Fertile fronds with sporangia