

CHAPTER 3

THE FERNS AS A PLANT GROUP

“The road up the mountain winds round its edge, and is bounded on one side by deep gullies, and on the other by high walls of rock, covered with the most lovely looking ferns and flowers. From the road you can see the ocean. The gullies are filled with the beautiful tree fern; here and there in a fissure of the rocky wall you see a group of gigantic ferns springing from a bed of smaller ferns, violets, and moss, giving out all the richest varieties of light, shade, and deep colour – such nooks as Shakespeare delighted to revel in, and in which you might suppose all the antipodean fairies loved to congregate.”

A traveller on the Clyde Mountain Road, west of Batemans Bay. Illawarra Mercury, March 1860.

Rainforest on Clyde Mountain

WHAT IS A FERN?

The ferns are one of the major groups within the Plant Kingdom and occur across the globe in all but the coldest and the most arid lands. The global number of ferns and their allies is estimated to be around 15,000 species; this compares with some 353,000 species of conifer and flowering plant, the other groups making up the vascular plants. Unlike the flowering plants, ferns reproduce by spore rather than by seed. Fern plants range in size from tiny filmy ferns not much more than one centimetre long to tall growing tree ferns. The tallest of all ferns is reputed to be the Norfolk Island Tree Fern *Cyathea brownii*, which grows to over 20 metres in height.

Ferns are mostly terrestrial (growing in soil), but may be epiphytic (growing on other plants) or lithophytic (growing on rock) while a few ferns are aquatic (floating) species. Some rainforest species are tall climbers, extending well up the trunks of tall trees and some ferns specialise in growing on other ferns, such as Ribbon Fern *Ophioglossum pendulum* in clumps of *Platynerium* species and Filmy Ferns *Hymenophyllum* species on the trunks of tree ferns.

Many of the features described below are used to identify individual fern species. These features range from the general character of the fern and its frond, the nature of the stem and rhizome and the appearance of the fertile frond, which is often different to the sterile frond. The presence, type and abundance of hairs and scales can be particularly important in some groups. A glossary of botanical terms is provided at the back of the book.

The rhizome

Many fern species produce *rhizomes*. These are long, wiry stems from which the fronds originate. They may be buried underground or in the case of climbing ferns, creep across rocks and tree trunks. Hairs and scales are often present on the rhizome and may be helpful in identifying some species. Underground rhizomes are important for ferns to survive drought and bushfire, after which they are able to produce new fronds to replace those lost to desiccation or fire.

The frond

The fern frond can be likened to a branch of a tree, having a stem, branches and leaves. A frond may be simple (unbranched) or compound (divided up to three times). Ferns generally have delicate fronds with thin leaves produced on a *stipe* (stem). Above the stipe, the central stem of the frond *lamina* is known as a *rachis*. In a compound frond there are primary and secondary rachises. The secondary leaf segment of a compound frond is known as a *pinna* (pl. *pinnae*), while the ultimate segment is a *pinnule*. The young, unfurling frond is known as a *crozier* or *crossier*. The term derives from the French and Latin and refers to a person who carries a cross but eventually came to mean the crook or staff carried by the person preceding an archbishop. The crozier is a particular feature of a fern, and is not exhibited in any other plant group.

Fertile fronds

Fertile (spore-bearing) fronds may be the same shape and size as sterile fronds or they may be very different; differences are particularly common in some species in the family Blechnaceae. Fern spores are produced in *sporangia* (spore

Examples of fern croziers



Dicksonia antarctica
(Dicksoniaceae)



Polystichum proliferum
(Dryopteridaceae)



Blechnum nudum
(Blechnaceae)



Hypolepis glandulifera
(Dennstaedtiaceae)

cases) often grouped in *sori* (a cluster of sporangia) or, in the fern allies, into *stroboli* (cone-shaped structures containing spores). Ferns primarily produce their spore on the underside of the frond, which provides protection from the elements (see accompanying photographs). Some species have *indusia* (coverings over the sori). When the ancestors of today's ferns left the ocean for a terrestrial existence they retained the need for water to achieve fertilisation. The spores germinate to form a *prothallus* (gametophyte stage) bearing male and/or female sex organs and gamete transfer and fertilisation is by water, thus producing a new fern plant.

Enormous amounts of microscopic fern spore are blown widely by the wind across the landscape with those that land on suitable moist sites growing into new ferns. The ability of fern spore to disperse over very long distances explains why some fern species are found across broad geographic regions of the globe.

Hairs and scales

Hairs and scales of different types appear on most ferns; their presence or absence may be useful in identification. Hairs range from simple short hairs to glandular hairs. Scales, often appearing on the rhizome and the base of the stipe, are thin, papery structures that

Examples of fertile fern fronds



Dendroconche scandens
(Polypodiaceae)



Blechnum cartilagineum
(Blechnaceae)



Asplenium flabellifolium
(Aspleniaceae)



Pellaea falcata
(Pteridaceae)



Gleichenia microphylla
(Gleicheniaceae)



Hypolepis muelleri
(Dennstaedtiaceae)

CHAPTER 6

SPECIES ACCOUNTS

A detailed account of each fern species known to occur within the South Coast region appears on the following pages. Each species is described using the same format, as explained below. The species are dealt with in alphabetical order based on the generic name and placed within three groupings, namely (i) fern allies, (ii) true ferns and (iii) naturalised species. Because of their value in aiding identification, photographs are given priority over lengthy written descriptions.

*Sticherus lobatus***TAXONOMIC NAME**

The genus and species names used here are those appearing in Australian Plant Census (APC), maintained by the Australian National Herbarium in Canberra. Synonyms (abbreviated as syn.), recent alternative names for the species, are provided where relevant.

Common name

The common or popular name of the fern is stated. Different regions may use other common names.

Family

The plant family to which the species belongs is stated; family designation follows Australian Plant Census.

Notes

Notes provide a summary of the species and its occurrence in the region and more widely. This may include dates and locations for very rare species or notes on differentiation from closely related species.

DISTINGUISHING FEATURES

A brief description of the species is provided, particularly identifying those features that are most helpful in differentiating the species from closely related or similar looking species. The measurements provided are typical. Remember that plants may vary greatly in their dimensions depending upon local conditions.

RANGE

The overall range of the species is provided, including Australian and extra-Australian distribution. Abbreviations used, all of which are obvious, are: Overseas: NZ, NG, N.Cal.; states: QLD, NSW, VIC, TAS, SA, WA, NT; NSW Botanical Subdivisions: NC - North Coast, CC - Central Coast,

SC - South Coast, NT - Northern Tablelands, CT - Central Tablelands, ST - Southern Tablelands, NWS - North Western Slopes, CWS - Central Western Slopes, SWS - South Western Slopes, SWP - South Western Plains, NFWP - North Far Western Plains. Two island territories off the east coast of Australia are included: LHI - Lord Howe Island and NI - Norfolk Island. An asterisk (*) indicates introduced to that region.

DISTRIBUTION AND HABITAT

The known distribution of the species within the South Coast region is given. This can be cross-referenced with the map accompanying each species description. Notes on the preferred habitats of the species are also provided here.

STATUS

The author's assessment of the status of the species in the region is stated, with other comments where these are warranted.

ETYMOLOGY

The derivation of the genus and species names based on Botanical Latin is stated. A most useful reference in this regard is the book *Botanical Latin* by Stearn (2005).

PHOTOGRAPHS

Almost all of the photographs used in this book were taken by the author in the wild on the South Coast. A few species not located are illustrated by other photographers, as indicated in the acknowledgements.

DISTRIBUTION MAPS

Maps showing the distribution of each species indicate the accumulated observations by the author over a 30-year period. Records of some of

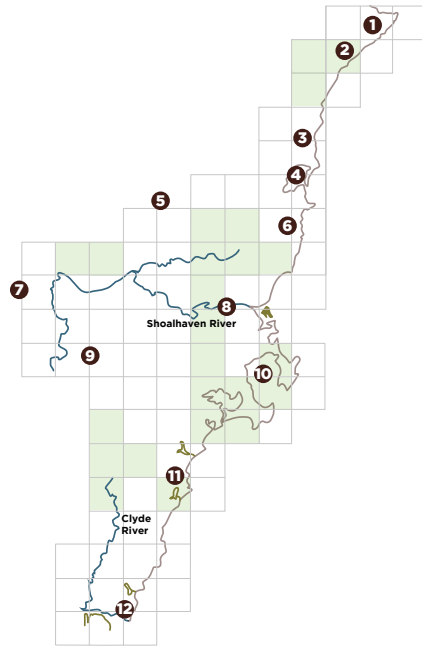


Slender Clubmoss

Lycopodiaceae

Slender Clubmoss is found around the edges of the continent, from north Queensland, through New South Wales to Victoria and Tasmania and the far southeast of South Australia. This species also occurs widely in New Zealand. On the South Coast, it grows in permanently wet swamps on sandstone soils, where its simple fronds distinguish it from the other fern allies in the same family. In this region, it is primarily a species of the highlands, with a few occurrences in the Jervis Bay area.

Distinguishing Features A clubmoss with well-developed underground stems. Aerial stems simple to twice-branched, erect or drooping. Leaves crowded, spreading. Strobili (cones) are produced along the stem, rather than at the end as in other species.



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|------------------|----------------|-----------------|
| 1 Port Hacking | 5 Moss Vale | 9 Nerriga |
| 2 Helensburgh | 6 Shellharbour | 10 Jervis Bay |
| 3 Wollongong | 7 Bungonia | 11 Ulladulla |
| 4 Lake Illawarra | 8 Nowra | 12 Batemans Bay |

Range Southwest Pacific, NZ; all states except WA, NT; NSW: C, NT, CT.

Distribution and Habitat Ranges from Royal National Park south to the Clyde River catchment. Primarily in permanently wet sandstone swamps on the plateaux.

Status Moderately common.

Etymology *Lycopodiella*: related to the genus *Lycopodium*; *lateralis*: on the side, referring to the location of the strobili found on the side of the stem.

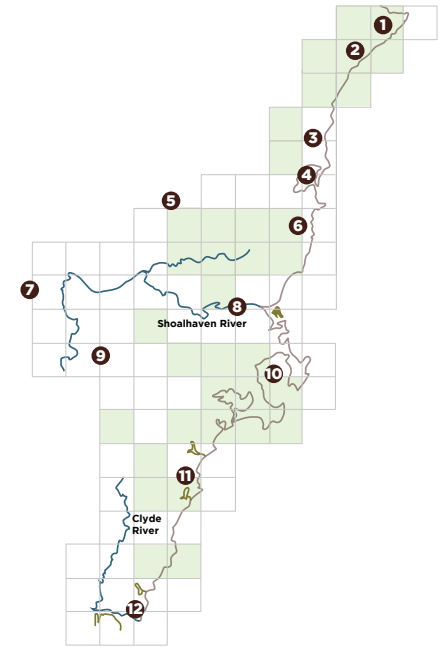


Bushy Clubmoss

Lycopodiaceae

This clubmoss is found in eastern Australia, from north Queensland south to Victoria and Tasmania. It also occurs on the North Island of New Zealand and on some Pacific islands. On the South Coast it is very common throughout the region in forest on the sandstone plateaux, usually growing in relatively dry forest on gully sides.

Distinguishing Features An erect clubmoss, mostly with small, densely-packed leaves. Leaves are dimorphic, that is of two types, one closely packed the other spreading. Strobili terminal on branchlets. Plants may look like a miniature pine tree and grow up to one metre tall in dense vegetation.



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|------------------|----------------|-----------------|
| 1 Port Hacking | 5 Moss Vale | 9 Nerriga |
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| 3 Wollongong | 7 Bungonia | 11 Ulladulla |
| 4 Lake Illawarra | 8 Nowra | 12 Batemans Bay |

Range New Caledonia; QLD, VIC, TAS, SA; NSW: C, T.

Distribution and Habitat Widespread throughout the region. Grows on sandstone soils in dry forest and woodland and the edges of swamps.

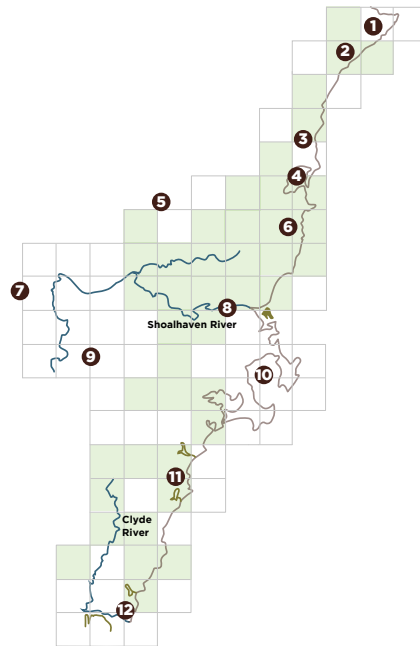
Status Common.

Etymology *Lycopodium*: *lykos* - wolf and *pod* - foot; *deuterodensum*: *deuter* - second and *densum* - dense, in reference to the densely packed leaves.

Trim Shield Fern
Dryopteridaceae

This *Lastreopsis* occurs from North Queensland to the far eastern corner of Victoria, with a few records from Tasmania. Trim Shield Fern often forms large colonies, on the edges of rainforest and on drier sites than the similar-looking *Lastreopsis microsora*. It seldom occurs in dense rainforest, being replaced by *Lastreopsis microsora*.

Distinguishing Features A medium-sized ground fern with a thick, long-creeping rhizome. Fronds to 1 m tall, lamina triangular, dull green, 3-4 pinnate, feeling rather stiff. Lowest pinnule often born on the primary rachis. Pinnules with pointed teeth. Sterile and fertile fronds similar. Sori in two rows below each pinnule.



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Range QLD, VIC, TAS; NSW: C, NT, CT.

Distribution and Habitat Found in and near rainforests throughout region, often on the drier edges.

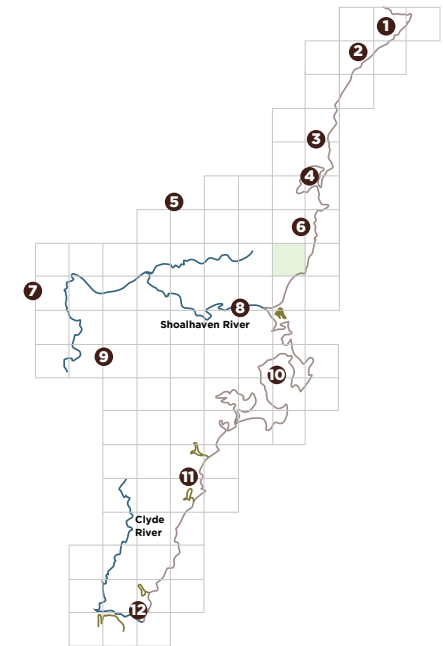
Status Abundant.

Etymology *Lastreopsis*: *Lastrea* - a genus of fern and suffix *opsis* - similar to; *decomposita*: more than once divided.

Bristly Shield Fern
Dryopteridaceae

This species of *Lastreopsis* is rare in Australia, occurring in New South Wales (mainly within the Sydney Basin), southern Victoria and western Tasmania. It is common in New Zealand. This fern is listed as endangered in NSW. The bristle-like scales on the rachis readily identifies this species from the other local *Lastreopsis* species.

Distinguishing Features Rhizome long-creeping. Fronds erect to over 60 cm tall. Lamina triangular, 3-4 pinnate, dark green. Rachis densely covered with spreading, dark red-brown bristle-like scales, pinnules with sharp points. Sori circular, in two rows below pinnules.



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|------------------|----------------|-----------------|
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Range NZ; VIC, TAS, NSW; CC, CT.

Distribution and Habitat There is only one known record of this fern on the South Coast, namely an 1884 collection from Brogers Creek in Kangaroo Valley.

Status Very rare.

Etymology *Lastreopsis*: *Lastrea* - a genus of fern and suffix *opsis* - similar to; *hispida*: covered in course, rigid hairs.