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Asplenium L.

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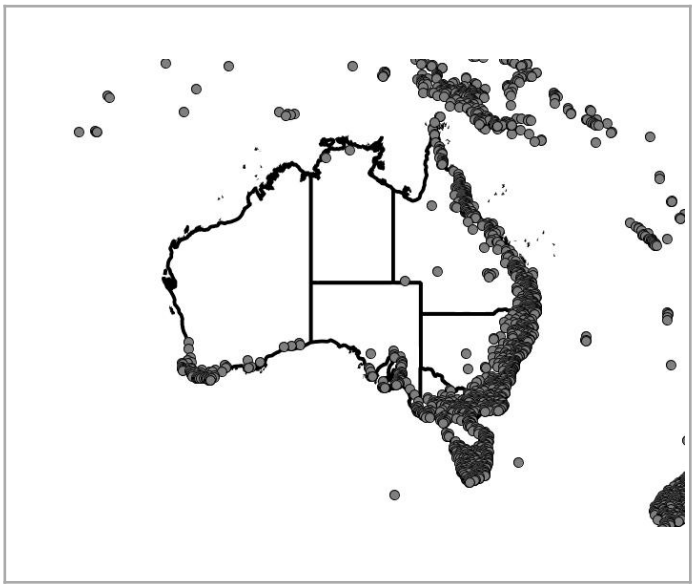
Asplenium L.

- Brownsey, P.J. in McCarthy, P.M. (ed.) (1998), Aspleniaceae. *Flora of Australia* 48

P.J.Brownsey

Terrestrial or epiphytic ferns. Rhizome erect or short-creeping, rarely long-creeping. Fronds monomorphic or rarely dimorphic, very variable in size; clathrate scales present on rhizomes and fronds, sometimes also hairs. Lamina simple to 5-pinnate; veins free or rarely anastomosing. Sori elongate along veins, away from lamina margins, protected by elongate indusia attached to the veins. Spores monolete, echinate, reticulate or costate-alate.

Distribution: A cosmopolitan genus of about 650 species with 30 native species in Australia, eight of them endemic.



Etymology: from the Greek *splen* (the spleen), in reference to supposed medicinal properties in treating that organ.

Chromosome Numbers: x = 36 (143 species studied), J.D.Lovis, Advances Bot. Res. 4: 277 (1977).

Nomenclature and Typification: Asplenium marinum L.

Notes: Despite its great size and variation, no attempt has been made to subdivide *Asplenium* in its entirety. One natural group, the *Bird's Nest Spleenworts* , has been recognised as sect. *Thamnopteris* by Holttum (1974), and another as sect. *Hymenasplenium* by Iwatsuki (*Acta Phytotax. Geobot.* 27: 39-55, 1975). Other recognisable groups which extend to Australia include those based around *A. aethiopicum* and *A. trichomanes/monanthes.* Holttum (1966) suggested five major groupings for the Malaysian species based on perispore morphology and vegetative characters. Other investigations of perispore morphology by both light and scanning electron microscopy (Puttock & Quinn, 1980; Tryon & Tryon, 1980; Tryon & Lugardon, 1980; M.F.Large & J.E.Braggins, Spore atlas of New Zealand ferns and fern allies, *New Zealand J. Bot.* , Suppl. 1: 1-167, 1990) indicate 3 major spore types in the genus (with echinate, reticulate and costate-alate patterns) of which only the last two occur in Australian species. The costate-alate types are particularly variable with a range of broad ridges to narrow wings, either smooth or fimbriate on their margins, separating lacunae which are characteristically smooth, fenestrate or covered in low, echinate or ribbed patterns. Puttock & Quinn (1980) illustrate spores of most of the Australian species and suggest several groupings which in part support those proposed by Holttum (1966). However, in the absence of any overall subgeneric classification no formal grouping of the Australian species has been proposed here, although the species have been arranged in related groups (search on hierarchical listing, 'as in the published volumes' for Asplenium to list these groups).

Bibliography: G.Bentham, *Asplenium* Sections *Euasplenium* and *Darea* , *Fl. Austral.* 7: 742-749 (1878); R.E.Holttum, *Fl. Malaya (Ferns)* 2nd edn, 2: 413-443 (1968); R.E.Holttum, *Asplenium* Linn., sect. *Thamnopteris* Presl, *Gard. Bull.* 27: 143-154 (1974); P.J.Brownsey, A taxonomic revision of the New Zealand species of *Asplenium, New Zealand J. Bot.* 15: 39-86 (1977); P.J.Brownsey, *Asplenium* hybrids in the New Zealand flora, *New Zealand J. Bot.* 15: 601-637 (1977); D.L.Jones & S.C.Clemesha, *Austral. Ferns & Fern Allies* 2nd edn, 81-93 (1981); B.D.Duncan & G.Isaac, *Ferns & Allied Pl. Victoria, Tasmania & S. Australia* 164-175 (1986).

Nomenclature

Brownsey, P.J. in McCarthy, P.M. (ed.) (1998) , Aspleniaceae. *Flora of Australia* 48 : 296

- taxonomic synonym: Chamaefilix Hill ex Farw.
- taxonomic synonym: Caenopteris Bergius
- taxonomic synonym: Darea Juss.
- taxonomic synonym: Acropteris Link
- taxonomic synonym: Neottopteris J.Sm.
- taxonomic synonym: Amesium Newman
- taxonomic synonym: Tarachia C.Presl
- taxonomic synonym: Thamnopteris (C.Presl) C.Presl
- taxonomic synonym: Asplenium sect. Asplenidictyum Hook.
- taxonomic synonym: Asplenidictyum (Hook.) J.Sm.
- taxonomic synonym: Eropodium Trevis.
- taxonomic synonym: Hymenasplenium Hayata

Images

Fig. 1: '*Asplenium excisum*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 2: '*Asplenium capitisyork*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 3: '*Asplenium appendiculatum subsp. appendiculatum x Asplenium bulbiferum subsp. gracillimum*' by Royal Botanic Gardens Victoria (© Royal

Fig. 4: '*Asplenium harmanii*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 5: '*Asplenium lobulatum*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 6: '*Asplenium novoguineense*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 7: '*Asplenium attenuatum var. indivisum*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 8: '*Asplenium insiticium*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 9: '*Asplenium lobulatum*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 10: '*Asplenium simplicifrons*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 11: '*Asplenium simplicifrons*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 12: '*Asplenium dielerectum*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 13: '*Asplenium scolopendropsis*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 14: '*Asplenium bicentenniale*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 15: '*Asplenium goudeyi*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 16: '*Asplenium kaulfussii f. dareoides*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 17: '*Asplenium obtusatum*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 18: '*Asplenium obtusatum*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 19: '*Asplenium carnarvonense*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Fig. 20: '*Asplenium attenuatum hybrid*' by Royal Botanic Gardens Victoria (© Royal Botanic Gardens Board)

Flora of Australia: vascular plants Asplenium key

1	Fertile lamina simple or with all segments broadly (at least 4 mm) attached to the rachis	2
1	Fertile lamina divided into pinnae, most of which are narrowly (less than 4 mm) attached to the rachis	7
2	Lamina more than 5 cm wide; veins uniting into an intramarginal commissure	3
2	Lamina less than 5 cm wide; veins free throughout	6
3	Rachis flat, rounded or only slightly keeled on lower surface, prominently raised above	Asplenium nidus
3	Rachis distinctively keeled on lower surface, ±level with the lamina above	4
4	Base of lamina tapering to a narrow wing (less than 1 cm wide for at least 10 cm); fronds arising at various points in large clumps to produce a rather untidy rosette; lithophyte	Asplenium harmanii
4	Base of lamina not conspicuously tapering to a narrow wing; fronds produced in a circle, resulting in a neat rosette; lithophyte or epiphyte	5
5	Fronds to over 2 m long, forming a widely radiating rosette (mainland Australia)	Asplenium australsicum
5	Fronds to 75 cm long, forming an erect rosette (Lord Howe Island)	Asplenium goudeyi
6	Lamina never bearing bulbils; sori at almost 90° to midrib	Asplenium simplicifrons
6	Lamina frequently bearing bulbils; sori at narrow angles to midrib	Asplenium attenuatum
7	Exindusiate; lamina profusely hairy with hairs on both surfaces	Asplenium subglandulosum
7	Indusiate; lamina without hairs or sometimes with minute hairs or hair-like scales on abaxial surface	8
8	Fronds 2–4-pinnate throughout the frond, with several pinnae with multiple narrowly stalked secondary pinnae	28
8	Fronds pinnate, primary pinnae sometimes pinnatifid into segments that do not narrow towards the base or with one narrowly stalked secondary pinnae, or 2-pinnate only in basal primary pinnae	9
9	Frond segments and axes about the same width	Asplenium flaccidum
9	Frond with segments with clear expanded parts much wider than the stalks	10
10	Pinnae with rectangular pinnatifid segments along the entire length	11
10	Pinnae margins entire to deeply toothed, but not with rectangular pinnatifid segments	12
11	Almost all sori on both sides of the costa in a line parallel with the costa; pinnae never with a single secondary pinna at base	Asplenium caudatum
11	All sori on the margins of many pinnatifid segments; pinnae often with a single secondary pinna at base	Asplenium surrogatum
12	Stipe shorter than 1/10 of the frond length; pinnae 20–60 on each side of rachis	13
12	Stipe longer than 1/4 of the frond length or if shorter than 1/4 of the frond length, pinnae less than 20 on each side of rachis	14
13	Pinnae with acroscopic and basiscopic lobes near base; rachis regularly proliferous (Northern Territory)	Asplenium longissimum
13	Pinnae with an acroscopic basal lobe; rachis not proliferous (northeast Queensland)	Asplenium pellucidum
14	Pinnae typically flabellate or cuneate; rachis often extending well beyond final pinna and often proliferous at apex	Asplenium flabellifolium
14	Pinnae ovate, rotund, elliptic or oblong; rachis not extending well beyond final pinna, often terminated by a lamina segment, proliferous or not proliferous	15

15	Plants producing fronds bearing bulbils on terminal lamina segments or on the rachis	16
15	Plants never with fronds bearing bulbils	20
16	Rachis usually densely scaly in some sections; scales often hair-like or triangular or narrowly lanceolate with long filiform apices	17
16	Rachis sparsely scaly throughout; scales triangular or lanceolate without long filiform apices	Asplenium lobulatum
17	Stipes with sections of at least 1 cm that are devoid of scales	18
17	Stipes densely convered by scales along entire length	19
18	Fronds terminated by a pinnatifid segment 1 cm or more wide; pinnae never deeply incised almost to midrib; spores pale (Cape York Peninsula, Queensland)	Asplenium capitisyork
18	Fronds terminated by rachis or narrow pinnatifid segment less than 1 cm wide; pinnae sometimes deeply incised almost to midrib; spores dark (central Queensland)	Asplenium carnarvonense
19	Fronds with segments near the apex broadly (at least 4 mm) attached to rachis, or frond terminating in a long simple segment (Atherton and Windsor Tablelands, Queensland)	Asplenium bicentenniale
19	Fronds with all pinnae narrowly (less than 2 mm) attached to rachis (eastern Queensland)	Asplenium paleaceum
20	Stipes black or dark brown throughout	24
20	Stipes green on upper surface near basal pinnae	21
21	Lamina thick and fleshy; lithophyte between the high tide mark and first line of trees and shrubs parallel to the sea, very rarely further inland	22
21	Lamina not thick and fleshy; lithophyte or terrestrial in rainforest	23
22	Lamina almost always with secondary pinnae, with some sori close to and parallel to margin; lamina apex pinnatifid (north from Kiama)	Asplenium difforme
22	Lamina very rarely with basal pinnae with a secondary pinna, sori remote and not parallel to margin; lamina apex like lateral pinnae, sometimes fused with a pinna below, not pinnatifid (Western Australia and south from Nowra)	Asplenium decurrens
23	Lamina apex pinnatifid; sori shorter than 4 mm long (northeast Queensland)	Asplenium tenerum
23	Lamina apex like lateral pinnae, sometimes fused with a pinna below, not pinnatifid; sori 5–10 mm long (Lord Howe Island)	Asplenium milnei
24	Pinnae round or oblong; apices blunt or obtuse	25
24	Pinnae ovate or falcate; apices generally acuminate, rarely acute	26
25	Basal pinnae ±rounded, minutely toothed or entire, often caducous leaving short projections; sori diverging from near costa	Asplenium trichomanes
25	Basal pinnae ±oblong, coarsely toothed, not caducous; sori distant from costa	Asplenium normale
26	Stipes, rachises and sometimes abaxial surfaces of pinnae with minute glandular hairs (sometimes lost in older collections); abaxial surfaces of pinnae without scales	Asplenium parvum
26	Stipes, rachises and abaxial surfaces of pinnae without minute glandular hairs; abaxial surfaces of pinnae with scattered Y-shaped or hair-like scales	27
27	Pinnae with sori less than 6 cm long; lithophyte of coastal limestone (Christmas Island)	Asplenium listeri
27	Pinnae with sori almost always longer than 6 cm; epiphyte or occasionally lithophyte, but not on limestone	Asplenium polyodon
28	Plants usually with at least some fronds bearing bulbils	29
28	Fronds never producing bulbils	30

29	Bulbils produced on upper surface of lamina; sori often close to and parallel to margin with indusium opening toward closest margin (south from southeast Queensland)	Asplenium gracillimum
29	Bulbils produced on rachis below terminal pinnatifid portion; sori always remote from margin with indusia opening away from closest margin (northeast Queensland)	Asplenium baileyanum
30	At least some sori marginal on narrow segments, parallel to margin, their indusia opening toward closest margin	31
30	All sori remote from margin or not parallel to margin, their indusia opening away from closest margin	34
31	Fronds or parts of fronds with sori with linear untimate segments, distinctively different from fronds or parts of fronds without sori that have deltoid or ovate ultimate segments	Asplenium dimorphum
31	Fronds with sori similar to fronds without sori	32
32	Lamina thick and fleshy; lithophyte between the high tide mark and first line of trees and shrubs parallel to the sea	Asplenium difforme
32	Lamina herbaceous or coriaceous, not thick and fleshy; terrestrial, lithophyte or epiphytes of rainforest or habitats away from the coastline	33
33	Rachis narrowly winged in upper half; ultimate segments cuneate-rhomboid, often with obtuse apices (Lord Howe Island)	Asplenium pteridoides
33	Rachis not narrowly winged in upper half; ultimate segments usually linear and acute (Victoria and Tasmania)	Asplenium appendiculatum
34	All ultimate segments cuneate or obovate to almost rectangular, deeply dissected near apex, gradually narrowing towards a typically broad attachment (by more than 3 mm)	Asplenium aethiopicum
34	Some or all ultimate segments ovate or elliptic, not deeply dissected near apex and narrowing abruptly near a narrow (by less than 2 mm) attachment	35
35	Sori to 10 mm long	Asplenium cuneatum
35	Sori 1–4 mm long	36
36	Stipe usually black, occasionally brown above; lamina usually 3- or 4-pinnate at base; plants epiphytic or lithophytic	Asplenium laserpitiifolium
36	Stipe green above; lamina 2-pinnate; plants lithophytic	Asplenium hookerianum

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