

Key to *Fissidens* in Australia¹

- 1** Costa seemingly absent or rudimentary; lamina cells large, thin-walled, c. 25 µm or more long2
- 1:** Costa well defined; lamina cells small to medium-sized, mostly < 25 µm long, thin- to thick-walled4
- 2** Plants minute, to 1.5 mm tall; leaves lacking a dorsal lamina; costa commencing part way up leaf; sheathing leaf base strongly shouldered; lobes of shoulders often recurved like small horns; leaves elimbate (1).....[F. thorsbornei](#).....3
- 2:** Plants to 8 mm tall; leaves with vaginant, dorsal and apical laminae; all laminae limbate.....3
- 3** Limbidium uni- to bistratose, with cells 7–10 µm; vaginant laminae with minor lamina 1/3–1/2 leaf length (2:):.....[F. hyalinus](#).....3
- 3:** Limbidium bi- to multistratose, with cells 3–7 µm; vaginant laminae with minor lamina 1/2–2/3 leaf length[F. dealbatus](#).....3
- 4** Leaves with a limbidium on apical, dorsal and vaginant laminae (1:)5
- 4:** Leaves with the limbidium confined to the vaginant laminae, or elimbate.....16
- 5** Lamina cells 5–10 (–15) µm (4).....6
- 5:** Lamina cells (12–) 15–40 µm14
- 6** Stems to 6 cm long; limbidium strong, (1–) 2–4 or more cells thick, 4 or more cells wide; plants aquatic or in wet places (5)7
- 6:** Stems to 1 cm long; limbidium weaker, 1–3 (–4) cells thick, 1–3 (–6) cells wide; leaves 0.50–1.75 mm long, 0.1–0.5 mm wide; plants in moist to drier habitats, generally not aquatic 8
- 7** Limbidium multistratose, 4 or more cells thick and wide; leaves oblong to lanceolate, 2.5–4.0 mm long, 0.6–0.7 mm wide; apex acute to acuminate (6)..... [F. rigidulus](#).....7
- 7:** Limbidium mostly unistratose, 2–5 cells wide; leaves elliptical to ovate, 1.1–2.0 mm long, 0.3–0.7 mm wide; apex obtuse, apiculate [F. dietrichiae](#).....7
- 8** Plants minute; stems 0.3–1.0 mm long, repeatedly branched; leaves in 3–6 (–10) pairs, ligulate-lanceolate, 1.3–1.6 mm long, 0.20–0.25 mm wide; margins entire; lamina cells ±hexagonal, 8–10 µm, in the base of vaginant laminae becoming 35–55 × 15–20 µm, each with a large central papilla (6:):...
.....[F. biformis](#).....9
- 8:** Plants larger; stems simple or branched, at least 1–8 mm long.....9
- 9** Lamina cells 5–9 µm (8:):..... 10
- 9:** Lamina cells 7–10 (–16) µm 11
- 10** Vaginant laminae 2/3–3/4 leaf length, very broad, open, gaping; leaves in 5–15 pairs, often ±recurved when moist, broadly oblong-lanceolate, 1.0–1.5 mm long, 0.35–0.50 mm wide; margins irregularly serrulate near apex and proximal part of vaginant laminae; limbidium intramarginal proximally, with a large vitta of laminal cells outside (9)..... [F. megalotis](#).....11
- 10:** Vaginant laminae 1/2–2/3 leaf length, closed; leaves in numerous pairs, ±falcate when moist, patent, often ±undulate, when dry strongly falcate-decurved or secund, often crisped, 1.00–1.75 mm long, 0.25–0.45 mm wide, 2–7 times longer than wide; margins smooth; limbidium marginal throughout.....
.....[F. leptocladus](#).....11
- 11** Vaginant laminae reaching to 1/2 leaf length, closed; leaves loosely imbricate, linear-lanceolate, 1.00–1.25 mm long, 0.15–0.30 mm wide; margins serrulate at apex, elsewhere entire; lamina cells irregularly hexagonal, 8–15 µm, smooth to mammillose or weakly papillose (9:):..... [F. angustifolius](#).....11
- 11:** Vaginant laminae reaching 1/2–2/3 (–3/4) leaf length, half open to closed; lamina cells smooth or with a large central papilla..... 12

¹ Unless stated, reference to “leaves” indicate either vegetative or stem leaves. Furthermore, because fertile material or sporophytes are uncommon, the key is based almost entirely on vegetative characters.

- 12 Plants light to deep green; stems unbranched or sparingly so; leaves in 6–10 pairs, lanceolate to oblong-lanceolate, mostly 0.4–0.6 mm long, 0.15–0.20 mm wide; limbidium complete except at the apex, unistratose, mostly 1 cell wide, broadening to 2 or 3 cells wide at the base; vaginant laminae reaching 1/2–3/5 leaf length, closed; lamina cells \pm hexagonal, 7–10 μ m, to c. 20 μ m long in proximal part of vaginant laminae, the surface convex to mammillose (11:)
[F. bryoides](#)..... 13
- 12: Plants yellow-green; stems simple or branched, 1–8 (–20) mm long; leaves lanceolate to linear-lanceolate; limbidium on all laminae or sometimes absent on dorsal and apical laminae; lamina cells 8–15 μ m, smooth, the surface flat to rounded 13
- 13 Plants yellow-green, densely gregarious; leaves \pm distant, lanceolate, 0.5–0.6 mm long, 0.10–0.15 mm wide; vaginant laminae \pm closed; dorsal lamina tapered to insertion; border adhering to costa proximally (12:)
[F. perangustus](#)..... 13
- 13: Plants yellow-green, glossy, scattered to loosely gregarious; leaves, imbricate, linear-lanceolate, 0.5–2.0 mm long, 0.15–0.5 mm wide; vaginant laminae half open; dorsal lamina tapered to the base, mostly ending above insertion.
[F. curvatus](#)..... 13
- 14 Costa failing well below the apex; lamina cells 30–40 \times 15–20 μ m (5:)
[F. flaccidus](#)..... 15
- 14: Costa percurrent to short-excurrent; lamina cells 12–25 \times 10–15 μ m..... 15
- 15 Leaves lanceolate, 1.3–1.5 mm long, c. 0.3 mm wide; vaginant laminae 1/2–3/5 leaf length; lamina cells 16–20 \times 12–15 μ m; dioicous (14:)
[F. darwinianus](#)..... 15
- 15: Leaves oblong, 1.5–2.0 mm long, 0.35–0.45 mm wide; vaginant laminae c.1/2 leaf length; lamina cells 12–25 \times 10–15 μ m; monoicous
[F. zollingeri](#)..... 15
- 16 Leaves with a limbidium (at least in part), occasionally restricted to perichaetial or perigonal leaves (4:)
..... 17
- 16: Leaves lacking a limbidium..... 69
- 17 Lamina cells smooth, not mammillose or papillose (16)..... 18
- 17: Lamina cells mammillose or papillose (sometimes the papillae minute) 58
- 18 Plants aquatic, emergent or submerged, in wet places (17)..... 19
- 18: Plants not aquatic, in moist to drier habitats 21
- 19 Leaves distant, linear-lanceolate, 5–9 mm long, 0.5–0.9 mm wide, 8–10 times as long as wide; apical margins entire or weakly serrate; serrations not visible with \times 10 hand-lens (18)
[F. berteroi](#)..... 19
- 19: Leaves overlapping, not linear-lanceolate, 1.1–4.0 mm long, 0.3–1.3 mm wide; apical margins sharply dentate or weakly serrulate 20
- 20 Leaves broadly lingulate-lanceolate, 2.5–4.0 mm long, 0.8–1.3 mm wide, c.4 times as long as wide; apical margins sharply and irregularly dentate; teeth visible with \times 10 hand-lens (19:)
[F. adianthoides](#)..... 20
- 20: Leaves elliptical to obovate, 1.1–2.0 mm long, 0.3–0.7 mm wide, c. 2–2.5 times as long as wide; apical margins smooth or weakly serrulate.
[F. dietrichiae](#)..... 20
- 21 Plants minute; stems 0.5–3.0 mm long; sterile shoots sometimes to 10 mm long (18:)
..... 22
- 21: Plants larger; stems mostly 5 mm or more long 38
- 22 Vaginant laminae reaching 3/4 or more leaf length (21) 23
- 22: Vaginant laminae reaching 1/4–3/4 leaf length 24
- 23 Fertile plants 2–4 mm tall; leaves oblong-lanceolate; leaf apex acute; costa subpercurrent; lamina cells 8–20 μ m; vaginant laminae with a weak limbidium or elimbate (22)
[F. taylorii](#)..... 23
- 23: Fertile plants 1–3 mm tall; leaves cultriform; leaf apex acute, sharply recurved; costa percurrent to excurrent; lamina cells 8–10 (–20) μ m; vaginant laminae with limbidium weak on stem leaves, on perichaetial leaves broad proximally, narrowing above and often just extending into the apical lamina
.....
[F. bifrons](#)..... 23
- 24 Vaginant laminae reaching 1/2–3/4 leaf length (22:)
..... 25
- 24: Vaginant laminae less than 1/2 leaf length..... 29
- 25 Costa excurrent; fertile plants small, 1–3 mm tall; leaves in 3–6 pairs (sterile plants longer, with up to 18 pairs), lanceolate, to 0.5 mm long; lamina cells 15–30 \times 11–20 μ m (24)
[F. beckettii](#)..... 25
- 25: Costa subpercurrent to percurrent 26

- 26 Leaves distantly spaced, obtuse; vaginant laminae 2/3–3/4 leaf length; limbidium vague in vaginant laminae; lamina cells 6–8 µm, weakly mammillose, with an obscure central papilla (25:)
..... [F. gymnocarpus](#)
- 26: Leaves ±imbricate, not distant 27
- 27 Plants blackish green with greenish tips; lamina cells 10–15 µm, thick-walled; vaginant laminae reaching 1/2–2/3 leaf length; limbidium of 1–3 rows of cells, intramarginal; costa subpercurrent (26:)
..... [F. integerrimus](#)
- 27: Plants yellowish green; lamina cells 6–12 µm 28
- 28 Stem leaves linear-lanceolate, 0.5–1.0 mm long, c. 0.2 mm wide; limbidium absent on dorsal lamina, strong on vaginant laminae, 1–4 cells thick, 2–5 cells wide below; lamina cells ±quadrate to hexagonal, 6–12 × 6–10 µm, longer below, thin-walled; perichaetial leaves with intermittent limbidium on the dorsal lamina, conspicuous on vaginant laminae; capsules oblong, asymmetrical, ±horizontal; spores 15.0–17.5 µm diam. (27:)
..... [F. curvatus](#)
- 28: Stem leaves ovate to ovate-lanceolate, 1.2–1.5 mm long, 0.5–0.6 mm wide; limbidium on vaginant laminae only, 1 or 2 cells thick, 2–4 cells wide; lamina cells firm-walled, irregularly hexagonal, 7–10 µm wide; perichaetial leaves with limbidium only on vaginant laminae; capsules symmetrical, erect; spores large, 22–32 µm diam.
..... [F. diversifolius](#)
- 29 Lamina cells 7–15 µm (24:)
..... 30
- 29: Laminal cells 15–40 µm 37
- 30 Plants blackish green with greenish tips; lamina cells 10–15 µm, thick-walled; vaginant lamina 1/2–2/3 leaf length, with a limbidium of 1–3 rows of cells, intramarginal; costa subpercurrent; Vic. and Tas. (29) [F. integerrimus](#)
- 30: Plants green to yellowish-green 31
- 31 Plants to 3 mm tall (incl. leaves) (30:)
..... 32
- 31: Plants to 6 mm tall (incl. leaves), occasionally taller 33
- 32 Vaginant laminae reaching to 1/2 leaf length, almost closed; limbidium in proximal half only, with 2–4 rows of pale prosenchymatous cells; laminal cells rounded-hexagonal, 7–13 µm; margins serrulate (31) [F. autoicus](#)
- 32: Vaginant laminae reaching 1/2–2/3 leaf length, 1/2 open to joining nearer margin; limbidium, if present, proximal only, unistratose, 2–4 cell rows wide, intramarginal; cells rectangular to prosenchymatous; lamina cells hexagonal and isodiametric, c. 10–15 µm; margins of vaginant laminae with occasional large teeth [F. flabellulus](#)
- 33 Leaves distantly spaced, obtuse; vaginant laminae to 2/3 (–3/4) leaf length; limbidium weak in vaginant laminae; lamina cells 6–8 µm, weakly mammillose with an obscure central papilla (31:)
..... [F. gymnocarpus](#)
- 33: Leaves ±imbricate, not distant 34
- 34 Vaginant laminae to c. 1/2 leaf length (33:)
..... 35
- 34: Vaginant laminae 1/2–3/4 (or more) leaf length 36
- 35 Plants with stems to 6 mm long; leaves lax, linear, 0.5–2.0 mm long, 0.15–0.30 mm wide; lamina cells thin-walled, 10–15 µm; limbidium intramarginal in lower 2/3 of vaginant laminae; cells thick-walled, in 1–4 rows, unistratose (34) [F. inaequiritis](#)
- 35: Plants with stems 5–10 mm long; leaves lanceolate, 2.5–3.5 mm long, 0.5–0.6 mm wide; lamina cells thick-walled, 8–15 µm; marginal 2–5 rows very thick-walled, swollen, highly refractive, forming a pale unistratose border [F. pseudopallidus](#)
- 36 Fertile plants to 5 mm long; perichaetial leaves much larger than stem leaves; sterile plants to 8 mm long, the leaves smaller and ±uniform in size, linear-lanceolate, 0.5–1.0 mm long, c. 0.2 mm wide; leaf apex acute-acuminate; costa joining with limbidia at the apex or ceasing just below; limbidium on vaginant laminae 2–4 cells thick, 4–5 cells wide below; lamina cells ±quadrate to hexagonal, 6–12 × 6–10 µm, longer below, thin-walled; perichaetial leaves with intermittent limbidium on dorsal lamina, conspicuous on vaginant laminae; capsules oblong, asymmetrical, ±horizontal; spores 15.0–17.5 µm diam. (34:)
..... [F. curvatus](#)
- 36: Fertile plants 2–4 mm tall, with a few bract-like leaves subtending perichaetial leaves; sterile plants to 10 mm long; leaves oblong-lanceolate, 0.2–0.5 mm long; leaf apex acute; costa subpercurrent; lamina cells 8–20 µm long; vaginant laminae with a weak limbidium or elimbate; capsules oval, symmetrical, erect or inclined; spores 12–36 µm diam. [F. taylorii](#)

- 37 Stems to 0.5 mm long; plants dull green, flabelliform, densely foliate; leaves lanceolate to ovate-lanceolate, 1.0–2.3 mm long, 0.10–0.25 mm wide; margins weakly bordered by 1–3 rows of elongate cells, or border absent; perichaetial leaves not differentiated; cells of apical lamina lax, thin-walled, 19–40 µm long (29:) [F. bogoriensis](#)
- 37: Stems 2–5 mm long; plants lustrous, usually rust-coloured (particularly stems and costa), with leaves distant to loosely imbricate, not flabelliform; leaves lanceolate to oblong-lanceolate, 0.7–1.4 mm long, 0.2–0.3 mm wide; vaginant laminae with a weak limbidium proximally; perichaetial leaves strongly shouldered; cells of apical lamina irregular, thick-walled, 15–35 µm long [F. pellucidus](#)
- 38 Lamina cells smooth, flat to mammillose (21:) 39
- 38: Lamina cells uni- to multipapillose 44
- 39 Leaves ±oblong, distant, to c. 1.0 mm long and 0.2 mm wide; lamina cells convex, mammillose, 7–8 × 8–11 µm; limbidium on vaginant laminae of 1–3 (–5) rows of smooth elongate cells; outer row ±rectangular (38)..... [F. oblatius](#)
- 39: Leaves lanceolate, linear-lanceolate to oblong-lanceolate, ±imbricate, not distant 40
- 40 Lamina cells 4–6 µm, markedly conical-mammillose; leaves lanceolate, 0.3–1.2 mm long, 0.14–0.30 mm wide (39:)..... [F. rupicola](#)
- 40: Lamina cells 5–12 µm, convex to mammillose or sharply unipapillose (*F. brassii* can also be multipapillose) 41
- 41 Leaves ligulate to oblong-lanceolate or oblong-ligulate, 0.4–0.6 mm long, 0.15–0.20 mm wide; lamina cells 5–10 µm; limbidium 1 or 2 rows of short oblong cells not reaching the apex of vaginant laminae (40:) [F. brassii](#)
- 41: Leaves narrowly lanceolate to lanceolate, 0.75–1.40 mm long; lamina cells 5–12 µm; limbidium 3–6 cells wide, occasionally intramarginal 42
- 42 Leaves 0.4–0.6 mm long, 0.15–0.20 mm wide, linear-lanceolate, flabellate in 4–6 pairs; vaginant laminae 2/5–1/2 leaf length; limbidium of rectangular to elongate-rectangular cells, occasionally intramarginal; lamina cells 8–12 µm, sharply mammillose to unipapillose; SW, SE and E Australia (41:)..... [F. tenellus](#)
- 42: Leaves 0.8–1.0 mm long, 0.16–0.24 mm wide, narrowly lanceolate to oblong, not flabellate, closely imbricate to weakly distant; vaginant laminae 1/2–2/3 leaf length; limbidium of 1–4 (–6) marginal rows of elongate cells; laminal cells 5–11 µm, uni- to bipapillose; N.T. and Qld 43
- 43 Stems 1.0–2.5 mm long; leaves closely imbricate, in 3–5 (–9) pairs; lamina margins finely crenulate-serrulate; limbidium of vaginant laminae in 3–6 rows of elongate marginal cells; lamina cells ±quadrate, 5–10 µm; costa excurrent; NT and Qld (42:) [F. cuspidiferus](#)
- 43: Stems to 5 mm long; leaves weakly distant, in many pairs; lamina margins crenulate; limbidium of vaginant laminae in 1–3 rows of thick-walled elongate cells, reaching to 2/3 leaf length, with an intramarginal zone of oblate hyaline cells; lamina cells rounded-hexagonal to slightly oblate, 7–8 × 8–11 µm; costa subpercurrent; N Qld..... [F. oblatius](#)
- 44 Lamina cells unipapillose (rarely bipapillose or multipapillose) (38:)..... 45
- 44: Lamina cells bi- to multipapillose 50
- 45 Limbidium of thick-walled cells, reaching to 2/3 the length of vaginant laminae, 1–4 cells wide, unistratose; cells elongate below, rectangular above, with an intramarginal zone of oblate hyaline cells; vaginant lamina margins undulate; leaves ±oblong, ±distant; leaf margins crenulate to serrulate above; N Qld endemic (44)..... [F. oblatius](#)
- 45: Limbidium of thin-walled cells 46
- 46 Limbidium reaching at least to the apex of vaginant laminae, or failing just below (45:)..... 47
- 46: Limbidium ending well below apex of vaginant laminae 48
- 47 Leaves in 5–20 pairs; lamina margins crenulate-serrulate; limbidium reaching apex of vaginant lamina or failing just below, 2–6 cells wide, 1–several rows thick; lamina cells 7.5–10.0 µm, convex, unipapillose, rarely bipapillose (46)..... [F. crenulatus](#)
- 47: Leaves in 4–12 pairs; lamina margins serrulate; limbidium on vaginant lamina, often extending into the apical lamina, 1–4 cells wide, unistratose; lamina cells 4–8 µm, unipapillose, the papillae large and rough [F. submarginatus](#)

- 48 Plants 1.0–2.5 mm tall; leaves closely imbricate, in 3–5 (–9) pairs, narrowly lanceolate; costa excurrent; lamina cells 5–10 μm , \pm quadrate, thin-walled, mammillose to unipapillose; vaginant laminae 1/2–2/3 leaf length; limbidium 3–6 cells wide, the cells long, hyaline (46:). [F. cuspidiferus](#)
- 48: Plants 1–5 mm tall; leaves imbricate in 4–8 pairs, oblong-lanceolate to linear-lanceolate or lanceolate; costa subpercurrent to percurrent; vaginant laminae to c. 1/2 leaf length 49
- 49 Plants 1–5 mm tall; leaves flabellate in 4–6 pairs; vaginant laminae 2/5–1/2 leaf length; lamina cells irregularly quadrate to hexagonal, 8–12 μm ; SW, SE and E Australia (48:). [F. tenellus](#)
- 49: Plants 1–3 mm tall, densely foliate in 5–8 pairs; vaginant laminae c. 1/2 leaf length; lamina cells rounded-quadrate to hexagonal, 7–10 \times 5–7 μm ; NE Qld. [F. perpusillus](#)
- 50 Limbidium present on vegetative and perichaetial leaves (44:). 51
- 50: Limbidium confined to vaginant laminae of perichaetial leaves 54
- 51 Limbidium proximal only, intramarginal, of 1–5 rows of thick-walled cells, with 1–4 rows of laminal cells outside; lamina cells \pm hexagonal, 6–10 μm , flat, papillose, with papillae over the lumen and marginal on cells (50:). [F. intromarginatulus](#)
- 51: Limbidium marginal on vaginant laminae 52
- 52 Leaves oblong-lingulate, to 1.0 mm long and 0.3 mm wide, widest towards the base; apex acute to obtuse; vaginant laminae reaching 2/3–3/4 leaf length, \pm closed; lamina cells 5–6 (–10) μm , convex; costa percurrent to short-excurrent (51:). [F. ceylonensis](#)
- 52: Leaves oblong to oblong-lanceolate or lanceolate, 0.8–1.5 mm long, 0.3–0.4 mm wide; apex acute to broadly acute; vaginant laminae reaching 1/2–3/4 leaf length, half closed to joined near the margin; lamina cells 5–8 μm ; costa ending just below the apex to percurrent 53
- 53 Limbidium unistratose, 1 or 2 cells wide, variable in length; lamina cells isodiametric, quadrate to rounded-hexagonal, 4–7 μm , in section c. 2 times as deep as wide, with 2–4 papillae per cell (52:). [F. elegans](#)
- 53: Limbidium of 2–4 rows of hyaline, elongate, smooth, thick-walled cells reaching c. 3/4 length of vaginant laminae; lamina cells quadrate to hexagonal, 5–8 μm , thin-walled, dark and obscure, quadrate to hexagonal, in section higher than wide to isodiametric, or wider than high, with 3–6 small papillae at the corners [F. hollianus](#)
- 54 Plants 0.5–3.5 mm long; leaves short-oblong-lingulate, 0.3–0.8 mm long; costa ceasing just beyond apex of vaginant laminae; lamina cells 5–8 μm , with 2–4 inconspicuous papillae; limbidium weakly developed, mostly absent, except in perichaetial and subperichaetial leaves where confined to the basal 1/4–1/3 (50:). [F. gardneri](#)
- 54: Plants 1.5–9.0 mm long; leaves ligulate to oblong-lanceolate or linear-lanceolate, 0.4–1.2 mm long; costa ending c. 3–6 cells below the apex to subpercurrent; lamina cells 5–8 μm , with 4–many conspicuous papillae; limbidium 1/3–1/2 or more length of vaginant laminae 55
- 55 Leaves 0.75–1.20 mm long (54:). 56
- 55: Leaves 0.3–0.8 mm long 57
- 56 Plants 1.5–5.0 mm tall; leaves oblong to linear-lanceolate, 0.75–1.15 mm long, 0.2–0.4 mm wide, imbricate; vaginant laminae reaching to c. 1/2 leaf length; cells of limbidium narrowly elongate below, becoming rectangular above; costa subpercurrent (55) [F. linearis](#)
- 56: Plants to 9 mm long; leaves oblong to lanceolate, to 1.2 mm long and 0.4 mm wide, loosely imbricate; vaginant laminae 1/2–2/3 leaf length; limbidium sometimes partly intramarginal, often indistinct on small plants; costa ending 3–16 cells below the apex [F. pallidinervis](#)
- 57 Plants 0.5–3.5 mm long; leaves short-oblong-lingulate, 0.3–0.8 mm long; costa ceasing just beyond the apex of vaginant laminae; lamina cells 5–8 μm , with 2–4 inconspicuous papillae; limbidium weakly developed, mostly absent, except in perichaetial and subperichaetial leaves where confined to the proximal 1/4–1/3; dorsal lamina narrowed below, almost reaching insertion (55:). [F. gardneri](#)
- 57: Plants 2–5 mm long; leaves ligulate to oblong-lanceolate, 0.4–0.6 mm long, 0.15–0.20 mm wide, apex obtusely rounded; costa subpercurrent to percurrent; lamina cells 5.5–8.0 μm , multipapillose; limbidium not reaching the apex of vaginant laminae, 1 or 2 cells wide, with cells elongate-rhomboid to elongate-hexagonal; dorsal lamina ending abruptly on costa well above, or reaching the leaf base [F. brassii](#)
- 58 Lamina cells smooth (17:). 59
- 58: Lamina cells mammillose or papillose 69

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60:	Leaves overlapping, lingulate-lanceolate to obovate, 2–4 times as long as wide.....	61
61	Plants blackish green with green tips; leaves linear, to 2.0 mm long, 0.2–0.3 mm wide; apical and dorsal laminae bi- to multistratose near costa, elsewhere unistratose	F. strictus
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62:	Leaves elliptical to obovate, 1.1–2.0 mm long, 0.3–0.7 mm wide, c. 2–2.5 times as long as wide; apical margins smooth or weakly serrulate.....	F. dietrichiae
63	Plants 0.5–1.5 mm long	64
63:	Plants 2–20 (–40) mm long	65
64	Leaves narrowly lanceolate, 0.25–1.00 mm long, 0.1–0.8 mm wide; vaginant laminae 1/2–3/4 leaf length, partly to fully open; lamina cells oblong to irregularly 5–6-sided, 20–40 × 10–12 µm, larger proximally in vaginant laminae (25–70 × 10–15 µm)	F. altisetus
64:	Leaves lanceolate, 0.6–1.2 mm long, 0.10–0.15 mm wide; vaginant laminae to c. 1/2 leaf length, half open or joining nearer to margin; lamina cells smooth, weakly convex, hexagonal, isodiametric, 10–15 µm wide, becoming slightly larger proximally in vaginant laminae	F. flabellulus
65	Fertile plants 2–4 mm long; sterile plants 5–10 mm	66
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66:	Leaves 0.6–1.0 mm long; apex obtuse to acute or obtuse-apiculate; fertile plants 2–3 mm long; sterile plants 5–8 mm; costa percurrent or just subpercurrent, failing 2–4 cells below the leaf apex; lamina cells 8.0–12.5 µm; vaginant laminae reaching to 1/2 leaf length or just beyond, half open.....	F. victoralis
67	Plants of moist habitats, occasionally in water; leaves broadly lingulate-lanceolate, 2.5–4.0 mm long, 0.8–1.3 mm wide, c. 4 times as long as wide; apical margins sharply and irregularly dentate	F. adianthoides
67:	Plants of drier habitats	68
68	Plants 5–10 mm or more long; leaves lingulate, 0.5–2.5 mm long, 0.15–0.60 mm wide; vaginant laminae reaching c. 1/2 leaf length; dorsal lamina ending abruptly at insertion, the base usually rounded; lamina cells markedly convex	F. sufflatus
68:	Plants 5–20 (–40) mm long; leaves linear-lanceolate, 1.5–3.0 mm long, 0.30–0.45 mm wide; vaginant laminae to 1/2–2/3 leaf length; dorsal lamina tapered to the base, reaching insertion; lamina cells weakly convex.....	F. pallidus
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71	Leaf apex rounded to obtuse; vaginant laminae reaching 7/8 or more leaf length, open and gaping; leaves ±oblong; Lord Howe Is.	F. wattsi
71:	Leaf apex broadly to sharply acute or acuminate; vaginant laminae reaching 1/2 leaf length; leaves linear-lanceolate	72

- 72 Plants 1–2 mm long; leaves in 3–14 pairs, oblong; apex rounded to obtuse; vaginant laminae to 7/8 or more leaf length, gaping, open, proximally with a hyaline to yellowish marginal strip of ±smooth, very thick-walled oblate cells 5–6 × 8–10 µm; cells towards the costa c. 20 µm long; dorsal lamina tapered, ending well above leaf insertion; lamina cells rounded-hexagonal, 5–9 µm, strongly mammillose or with few large compound papillae..... [F. perobtusus](#)
- 72: Plants 1–3 (–5) mm long; leaves in 4–6 pairs, lanceolate; apex broadly to sharply acute or acuminate; vaginant laminae 2/5–1/2 leaf length, usually partly open; dorsal lamina tapered to base, failing above or reaching the insertion; lamina cells irregularly quadrate to hexagonal, 8–12 µm, variably convex, strongly mammillose or sharply unipapillose [F. tenellus](#)
- 73 Plants 10–20 (–30) mm long; leaves imbricate to ±distant; vaginant laminae reaching 1/2–3/4 leaf length 74
- 73: Plants 3–10 mm long; leaves imbricate; vaginant laminae reaching to just beyond 1/2 leaf length..... 76
- 74 Plants 10–30 mm long; leaves oblong-lingulate, 2–3 mm long; vaginant laminae reaching to c. 3/4 leaf length, open or nearly so; minor lamina often rounded at apex, joining at or near costa; margins crenulate to weakly serrulate; dorsal lamina tapering at the base, usually ending above insertion; costa ending 5–12 cells below leaf apex; lamina cells irregularly rounded hexagonal, mostly 7–15 µm (73:.)..... [F. asplenioides](#)
- 74: Plants 10–20 mm long; leaves oblong to oblong-lingulate; vaginant laminae reaching to c. 3/4 leaf length, ending obliquely 75
- 75 Leaves overlapping at their bases, oblong-lanceolate, 2.0–3.5 mm long, 0.65–0.75 mm wide; apex acute to obtuse and apiculate; vaginant laminae reaching 1/2–3/4 leaf length, ending obliquely, half open to nearly closed; limbidium lacking; dorsal lamina tapered to base, often failing above leaf insertion; laminal cells small, c. 8 µm, obscure, mammillose; costa ending below the leaf apex (74:.)..... [F. oblongifolius](#)
- 75: Leaves distantly spaced, ±oblong, 0.7–1.0 mm long, 0.25–0.35 mm wide; apex obtuse; vaginant laminae 2/3–3/4 leaf length, ending obliquely, half open or joining nearer to margin or to costa; limbidium vague in vaginant laminae; dorsal lamina tapering or obtuse at base, reaching leaf insertion; lamina cells 6–8 µm, weakly mammillose, with an obscure central papilla [F. gymnocarpus](#)
- 76 Leaves oblong, 0.5–1.1 mm long, 0.25–0.35 mm wide; costa ending 3–10 cells below apex; lamina cells rounded-hexagonal, 6–10 (–12) µm, with prominent mammillae, or bipapillose (best seen in section) (73:.)..... [F. cucullatus](#)
- 76: Leaves oblong-lanceolate, 1.5–2.0 mm long, 0.2–0.4 mm wide; costa subpercurrent to barely excurrent; lamina cells rounded-hexagonal, 6–8 µm, mammillose..... [F. crispulus](#)
- 77 Lamina cells multipapillose (69:.)..... 78
- 77: Lamina cells mammillose to unipapillose 79
- 78 Plants 0.5–3.5 mm long; leaves oblong-lingulate, 0.3–0.8 mm long; apex obtuse; lamina cells rounded-hexagonal, 5–8 µm; papillae large; vaginant laminae to c. 2/3 leaf length, gaping, unequal; minor lamina joining on or near costa; costa ceasing well below apex, sometimes just beyond junction of vaginant laminae, often forked at the tip (77) [F. gardneri](#)
- 78: Plants 1.5–5.0 mm long; leaves oblong or linear-lanceolate, 0.75–1.15 mm long, 0.2–0.4 mm wide; apex acute; lamina cells subquadrate to irregularly 5–6-sided, 5–8 µm; papillae small, 4–6 or more per cell; vaginant laminae to 1/2 leaf length or more, joining c. half way between margin and costa; costa percurrent or ending just below apex, not forked at the tip [F. linearis](#)
- 79 Lamina cells 15–35 × 15–20 µm, smooth, rarely unipapillose (77:.)..... [F. pellucidus](#)
- 79: Lamina cells 5–15 × 5–15 µm, unipapillose to mammillose, or with 1–several small papillae 80
- 80 Plants 1–2 mm tall; leaves ±oblong, 0.3–0.8 mm long, 0.15–0.30 mm wide; margins crenulate; vaginant laminae reaching 7/8 or more leaf length, gaping, open; lamina cells rounded-hexagonal, 5–6 × 8–10 µm, strongly mammillose or with a few large papillae (79) [F. perobtusus](#)
- 80: Plants 1–3 (–5) mm tall; leaves 0.5–1.8 mm long; vaginant laminae 2/5–1/2 leaf length or slightly longer, not gaping; lamina cells quadrate to hexagonal, 7.5–15.0 µm, mammillose to unipapillose or with few small papillae 81

- 81** Plants flabellate, 1–3 mm tall; leaves lanceolate; apex broadly to sharply acute or acuminate; vaginant laminae $2/5-1/2$ leaf length, usually partly open; dorsal lamina tapered to the base, failing above or reaching the insertion; lamina cells pellucid, variably convex, irregularly quadrate to hexagonal, 8–12 μm , strongly mammillose or sharply papillose (80:)..... [F. tenellus](#)
- 81:** Plants not flabellate, 1–3 mm tall 82
- 82** Plants 1.0–2.5 mm tall; leaves lanceolate, 0.5–1.0 mm long, 0.16–0.24 mm wide; margins evenly serrate; lamina cells firm-walled, quadrate to hexagonal, 10–15 μm , unipapillose (81:) [F. serratus](#)
- 82:** Plants to 3 mm tall; leaves lingulate to narrowly oblong-lanceolate; lamina cells mammillose to unipapillose, or with few small papillae 83
- 83** Plants to 2 mm tall; leaves lingulate, to 1.5 mm long and 0.5 mm wide; margins very finely crenulated by projecting papillae; lamina cells \pm hexagonal or pentagonal, 7.5–10.0 μm ; papillae very few per cell, minute, often obscure (82:)..... [F. henryae](#)
- 83:** Plants to 3 mm tall; leaves narrowly oblong-lanceolate, to 1.8 mm long and 0.3 mm wide; margins crenulate-serrate; lamina cells quadrate to irregularly rounded-hexagonal, 8–12 (–15) μm , mammillose to unipapillose [F. badvinbarus](#)