Fissidens linearis Brid., *Musc. Rec.*, Suppl. 4: 187 (1819)

T: "In Nova Hollandia [Australia] inter *Pterigophylli jungermannoidis* radices caespitose vivit. Herb. du Font."; holo: B.

Polyoicous. Plants dull green, 1.5–5.0 mm tall, with weak axillary nodules. Leaves 5–22-jugate, erecto-patent, increasing in size upwards, to 1.5 mm long, 0.25–0.30 mm wide, oblong or linear-lanceolate; apex acute to acuminate, occasionally arcuate. Costa subpercurrent to slightly excurrent. Vaginant laminae to mid-leaf or more, partly open, sometimes weakly limbate on the upper leaves; dorsal lamina tapering to the base; margin papillose, crenulate; laminal cells subquadrate or irregularly 5–6-sided, 5–8 µm wide, to 10 µm wide near the costa; papillae c. 4–6 per cell.

Perichaetial leaves bordered by 1–4 rows of smooth clear elongate cells on the lower third of the vaginant lamina; juxtacostal cells larger. Calyptra conical, shallowly split. Setae 1.8–4.0 mm long, terminal. Capsules ±erect, symmetrical, narrowly oval; theca 0.3–0.6 mm long; operculum shorter, rostrate. Spores 8–15 µm diam.

Occurs in W.A.(?), N.T., Qld, N.S.W., A.C.T. and Vic. Also in Lord Howe Island, Norfolk Island, New Caledonia, Japan, Korea, Taiwan and New Zealand.

The inflorescence is variable but commonly synoicous with one antheridium occurring with archegonia; also autoicous or rhizautoicous. Deciduous axillary male and female branches are frequently seen in tangled red rhizoids at the bases of old plants.

A species with three varieties, two occuring in Australia. The third, var. *angustifolius* (Dixon) I.G.Stone from New Zealand, is included in the following key because some Australian specimens grade towards it.

Details of synonymy were provided by Stone (*J. Bryol.* 16: 403–405, 1991), with corrections in Stone (*J. Bryol.* 18: 163, 1994).

1 Costa usually percurrent, occasionally short-excurrent ..... var. **obscurirete**

1: Costa usually ending short of the apex, often obscured there by papillose laminal cells 2

2 Leaf apex acute, obtuse or, rarely, acuminate; leaves usually 4–6 times longer than wide; vaginant laminae mostly more than half, often two-thirds, the leaf length ..... var. **linearis**

[2: Leaf apex often acuminate; leaves 5–8 times longer than wide; vaginant laminae usually one-third to half the leaf length (New Zealand only) ..... var. **angustifolius]**

Fissidens linearis Brid. var. **linearis**

Fissidens arcuatulus Broth. & Watts, *Proc. Linn. Soc. New South Wales* 40: 368 (1915); *F. aeruginosus* Hook.f. & Wilson var. *arcuatulus* (Broth. & Watts) I.G.Stone, *J. Bryol.* 16: 238 (1990), *nom. illeg.*; *F. allisonii* Dixon & Sainsbury, *J. Bot.* 71: 216 (1933); *F. aeruginosus var. allisonii* (Dixon & Sainsbury) I.G.Stone, *J. Bryol.* 18: 163 (1994). T: on ground beyond Robin's farm, Lord Howe Island, *W.W.Watts 118*; holo: H-BR; iso: NSW. [The combination *F. aeruginosus* var. *allisonii* was made by Stone (1994) to replace the illegitimate name *F. aeruginosus* var. *arcuatulus*, but is superfluous as *F. aeruginosus* var. *arcuatulus* was already synonymised with *F. linearis* var. *linearis* by Stone (1991: 404). — H.Streimann & N.Klazenga, *Catalogue of Australian Mosses* 76 (2002)]

Fissidens humilis Dixon & Watts, *Proc. Linn. Soc. New South Wales* 41: 384 (1916). T: Newcastle, N.S.W., Mar. 1910, *C.J.Burgess 51*; holo: BM, iso: MEL, NSW.

Conomitrium coarctatum Müll.Hal., *Gen. Musc. Frond.* 76: (1900), *nom. nud.*; *F. coarctatus* Watts & Whitel., *Proc. Linn. Soc. New South Wales*, Suppl. 27: 23 (1902), *nom. nud.*

Illustrations: G.A.M.Scott & I.G.Stone, *op. cit.* 84, fig. 7; 87, fig. 8; 89, fig. 9 (1976), as *F. humilis*; D.G.Catcheside, *op. cit.* 82, fig. 21 (1980), as *F. humilis*; I.G.Stone, *op. cit.* 237, fig. 2f–x; 238, fig. 3a–u (1990), as *F. aeruginosus* var. *arcuatulus*; J.Beever, B.Malcolm & N.Malcolm, *The Moss Genus* Fissidens *in New Zealand[:] an illustrated key* 28 (2002); H.Streimann, *Mosses of Norfolk Island* 83, fig. 36 (2002).

Leaves in mid-stem 0.75–1.15 mm long, 0.12–0.21 mm wide, mostly 4–6 longer than wide. Costa subpercurrent, often concealed below the clear apical cell by papillose laminal cells, sporadically percurrent. Vaginant laminae frequently elimbate, except in perichaetial leaves which are short-bordered proximally by clear rectangular to prosenchymatous cells. Spores 8–15 µm diam.

Occurs in Central Australia (southern N.T.) and from Cape York in Qld south through N.S.W., A.C.T. and into western Vic.; also in Lord Howe Island and Norfolk Island. Grows on soil and rock. Also in northern New Zealand and probably elsewhere under other names.

N.T.: Standley Chasm, 1979, *J.H.Willis* (MEL). Qld: Cania Gorge, *I.G.Stone 21019* (MEL); Bunyip St, Burleigh Heads, *K.Cafarella (I.G.Stone 21729)* (MEL). N.S.W.: Cooks R., *Hamilton 1156* (NSW). Vic.: Monkey Ck, Bruthen, *R.Clark 17* (MEL); Natural Bridge, Mount Eccles Natl Park, *I.G.Stone 26060* (MEL).

Very variable in the size of plants and in the proportion of length to width of leaves, occasionally grading towards the New Zealand endemic var. *angustifolius* (Dixon) I.G.Stone which also has a subpercurrent costa. Occasional plants, in which the costa is subpercurrent in some leaves and percurrent in others, appear to intergrade with the var. *obscurirete*.

Fissidens linearis Brid. var. **obscurirete** I.G.Stone, *J. Bryol.* 16: 403 (1991)

Fissidens obscurirete Broth. & Paris, *in* V.F.Brotherus, *Öfvers. Förh. Finska Vetensk.-Soc.* 51(17): 7 (1909); *F. aeruginosus* Hook.f. & Wilson var. *obscurirete* (Broth.) I.G.Stone, *J. Bryol.* 16: 241 (1990). T: Yahoue, New Caledonia, *A. Le Rat 948*; holo: H-BR.

Fissidens microhumilis Dixon, *Proc. Roy. Soc. Queensland* 53: 24 (1941). T: Upper Mowbray R., Qld, *Mrs Sparvell 5873*; holo: BM.

Illustration: I.G.Stone, *op. cit.* 240, fig. 4a–t (1990), as *F. aeruginosous* var. *obscurirete*.

Resembles var. *linearis*, except the costa is percurrent, occasionally short-excurrent (especially in perichaetial leaves), and sporadically subpercurrent in lower leaves. The limbidium is longer on perichaetial leaves, and it is often present on most leaves (but the two can be difficult to separate). Spores 8–10 µm diam.

Occurs in northern N.T. and in eastern Australia from Cape York Peninsula to northern N.S.W.; on soil and rock in wet forest mostly at low altitudes. Also in Korea, Taiwan, Japan, New Caledonia and New Zealand.

N.T.: Doctors Gully, Darwin, *H.Streimann 39565* (CANB). Qld: Lockerbie, Cape York, I.G.Stone 25570 p.p. (MEL); Mitcha Ck, Palmerston Natl Park, *I.G.Stone 24107* (MEL). N.S.W.: Pimlico, *W.W.Watts Q5145* (NSW).