

Fissidens taylorii Müll.Hal., *Syn. Musc. Frond.* 1: 65 (1848)

Fissidens pygmaeus Taylor, *London J. Bot.* 5: 66 (1846), *nom. illeg.*, *non F. pygmaeus* Hornsch. (1841). T: Swan River, W.A., *J.Drummond*; holo: BM.

Autoicous. Plants minute, terrestrial; shoots dimorphic. Leaves 8–multijugate, erecto-patent, imbricate or distant, subequal, asymmetrical, oblong or linear to lanceolate, mostly c. 0.5 mm long; apex obtuse to acute, often apiculate. Costa subpercurrent to short-excurrent. Vaginant laminae usually 3/4 or more of the leaf length, half closed to almost closed, elimbate or limbate; apical lamina short, elimbate; dorsal lamina very narrowed to the base or failing above, elimbate; margin subentire. Laminal cells irregularly quadrate-hexagonal; longer in vaginant laminae and rhomboidal to rectangular.

Perigonia gemmiform, lateral or basal in leaf axils of sterile or female shoots, occasionally rhizautoicous or apparently independent. Female shoots 2–5-jugate, usually lateral or basal on sterile shoots; lower leaves bract-like; inner perichaetial leaves c. 1.0–1.5 mm long; apical and dorsal laminae narrow, elimbate, the dorsal usually short, occasionally almost obsolete; vaginant laminae inflated, usually limbate, occupying most of the leaf, ±open; margin entire to denticulate; costa subpercurrent to excurrent. Capsule thecae oval, erect or inclined, ±symmetrical, exceeding 40 cells around the circumference; operculum rostellate. Peristome either *bryoides*-type with spirally thickened forks and very hygrosopic, or modified with the teeth entire or rimose, not or weakly spirally thickened and only weakly hygrosopic.

Fissidens taylorii is characterised by the distinctly dimorphic sterile and fertile shoots. The latter, consisting of a few bract-like leaves subtending the perichaetials, are usually axillary, either basal or lateral, but never terminal on an otherwise vegetative leafy stem. The plants can occasionally be dioicous, as male, female and sterile shoots are often independent (although possibly derived by detachment from leaf axils of buried moribund plants).

Descriptions and illustrations are included in the comprehensive revision by Stone & Beever (1996).

Occurs in all Australian States and Territories, usually on compacted soil from semi-desert to more moist coastal areas but not in the wet-tropics. Also in North and South America and in New Zealand. All four varieties are known from Australia.

- 1 Leaves of sterile shoots broadest above mid-leaf, 2–2.5 times longer than wide; vaginant laminae c. 90% or more of the leaf length; limbidium generally absent; peristome teeth split, with 2 spirally thickened arms..... var. **gillianus**
- 1: Leaves of sterile shoots usually broadest at or below mid-leaf, 3–4.5 times longer than wide; vaginant laminae c. 75% of the leaf length; limbidium present or absent; peristome teeth entire or split.....2
 - 2 Peristome teeth entire, rimose or occasionally weakly split, papillose, ±erect whether dry or moist; leaves of sterile shoots subobtuse-apiculate to acute; costa usually percurrent var. **sainsburianus**
 - 2: Peristome teeth forked, the arms spirally ornamented, recurved when dry, strongly incurved when moist; leaves of sterile shoots obtuse, subobtuse or acute; costa subpercurrent to short-excurrent.....3
- 3 Sterile shoots 2–4 mm tall; leaves 0.30–0.85 mm long; apex obtuse, subobtuse-apiculate to acute; perigonia occasionally separate, often single and axillary at the base of sterile or perichaetial shoots or numerous and axillary, the leaves then short, obtuse or obtuse-apiculate var. **taylorii**
- 3: Sterile shoots 5–10 mm tall; leaves 0.5–1.0 mm long; apex acute; perigonia numerous in leaf axils; female shoots 1 or more, axillary near the base var. **epiphytus**

Fissidens taylorii Müll.Hal. var. **taylorii**

Fissidens basilaris Müll.Hal. & Hampe, *Linnaea* 26: 501 (1855). T: Barossa Range, S.A., *F.Mueller*; holo: BM; iso: MEL.

Fissidens sarcophyllus Burchard & Broth., *Pap. & Proc. Roy. Soc. Tasmania* 1895: 112 (1896), *nom. nud.*;
F. weymouthii Paris, *Index Bryol.*, Suppl. 166 (1900), *nom. nud.* Based on: Mt Wellington, Tas.,
W.A.Weymouth 772; HO, *fide* I.G.Stone, *J. Bryol.* 16: 263 (1990).

Fissidens sullivanii Müll.Hal., *Gen. Musc. Fr.* 56 (1901), *nom. nud.* Based on: Mt Ararat, Vic., Oct. 1882,
D.Sullivan; MEL 29185.

Fissidens nanopyxis Müll.Hal., *Gen. Musc. Fr.* 59 (1901), *nom. nud.* Based on: Port Phillip, Vic., *C.French*
14; MEL 29187.

Fissidens sublimbatus Broth., *Proc. Linn. Soc. New South Wales*, Suppl. 27: 28 (1902), *nom. nud.* Based on:
Lochiel, Vic., on submerged decaying log, 29 July 1900, *F.M.Reader 140*; NSW. [Immature material,
therefore the correct variety remains in doubt (Stone & Beever, 1996: 63).]

Illustrations: I.G.Stone & J.E.Beever, *J. Bryol.* 19: 52, fig. 1; 53, fig. 2a, c, f; 55, fig. 4 (1996); J.Beever,
B.Malcolm & N.Malcolm, *The Moss Genus Fissidens in New Zealand[:] an illustrated key* 68 (2002).

Vegetative shoots 2–4 mm tall (or more by repeated innovations). Leaves often boat-shaped,
0.30–0.85 mm long, 0.15–0.19 mm wide, 3–4.5 times longer than wide; apex obtuse to acute,
occasionally apiculate; costa subpercurrent to short-excurrent. Vaginant laminae elimbate or
weakly limbate. Laminal cells thin- or firm-walled, mostly 8–20 × 8–12 µm. Gametoezia
mostly axillary on vegetative stems, either basal or lateral, sometimes independent. Cells of
vaginant laminae of perichaetial leaves to 30 µm long, those in the limbidium to 80 µm.
Setae 2–6 mm long, erect or flexuose. Peristome teeth recurved when dry, strongly incurved
when moist, divided to c. half-way, the arms spirally thickened. Spores 15–32 µm diam.

The most widespread and variable variety in Australia, extending from comparatively moist
coastal regions into arid Central Australia (W.A., N.T., S.A., Qld, N.S.W., A.C.T., Vic. and
Tas.). Also in North and South America and New Zealand.

W.A.: Murchison Gorge, *I.G.Stone 6176* (MEL). N.T.: Standley Chasm, *I.G.Stone 5173* (MEL). S.A.:
Morialta Falls, *D.G.Catcheside 52.56* (AD). Qld: Carnarvon Gorge, *I.G.Stone 20240 p.p.* (MEL).
N.S.W.: Green Gully, near Young, *W.W.Watts 7164* (NSW). Vic.: Moyston, *I.G.Stone 9375* (MEL). Tas.:
Proctors Rd, Hobart, *W.A.Weymouth 2840* (HO).

Gametoezia frequently grow from old buried stems, often developing rhizoids at their bases
and becoming independent plants. The *taylorii* ‘expression’, which is more common in arid
regions, is not difficult to distinguish from the *basilaris* ‘expression’, its leaves being shorter
and broader, the apex is more obtuse, the costa is shorter, cells are slightly smaller and
spores larger; however, intermediates do occur. The *basilaris* ‘expression’ does not occur in
W.A.

***Fissidens taylorii* Müll.Hal. var. *gillianus* (Catches. & I.G.Stone) I.G.Stone & J.E.Beever,**
J. Bryol. 19: 51, 54 (1996)

Fissidens gillianus Catches. & I.G.Stone, *J. Adelaide Bot. Gard.* 1: 5 (1988). T: George Gill Range, N.T.,
J.H.Willis; holo: MEL 1022414.

Illustrations: D.G.Catcheside & I.G.Stone, *op. cit.* 6, fig. 3; 7, fig. 4, as *F. gillianus*; I.G.Stone & J.E.Beever,
op. cit. 52, fig. 1; 54, fig. 3c; 56, fig. 5a–d; H.Streimann, *Mosses of Norfolk Island* 88, fig. 39 (2002).

Leaves to c. 0.5 mm long and 0.2 mm wide, 2–2.5 times longer than wide, often broadest
above; apex obtuse, apiculate. Costa subpercurrent. Vaginant laminae c. 90% of the leaf
length, almost closed, elimbate. Dorsal lamina bowed outwards above, tapering to 1 row of
cells basally. Cells ±hexagonal, 10–15 × 8–10 µm. Rhizoidal gemmae 2–4-celled. Perigonia
axillary or basal on female shoots which are usually lateral or basal on vegetative shoots.
Perichaetial leaves elimbate, or the limbidium ill-defined. Setae 2.5–3.0 mm long, thick.
Capsule thecae short, cylindrical, c. 0.6 mm long and 0.35 mm wide. Peristome with inner
trabeculae deeper than in var. *taylorii*. Spores 18–20 µm diam.

Occurs in W.A., N.T. and N.S.W.; also on Phillip Island in the Norfolk Island group. Usually on comparatively moist red soil in arid regions.

W.A.: Three Mile Rocks, 37 km NNE of Bullfinch, *R.Wyatt & A.Stoneburner 4199* (PERTH). N.T.: Carmichael Crag, George Gill Ra., *A.C.Beauglehole 26400A* (MEL). N.S.W.: Caloola Ck, 62 km NNE of Broken Hill, *H.Streimann 6334* (CANB).

Distinguished from var. *taylorii* by the shorter and broader leaves with longer vaginant laminae. However, some specimens can be difficult to separate unless peristomes are present.

Fissidens taylorii Müll.Hal. var. **epiphytus** (Allison) I.G.Stone & J.E.Beever, *J. Bryol.* 19: 57 (1996)

Fissidens epiphytus Allison, *Trans. Roy. Soc. New Zealand* 88: 10 (1960). T: near Roxburgh, Otago, New Zealand, *K.W.Allison 5860*; holo: CHR; iso: MEL

Illustrations: I.G.Stone & J.E.Beever, *op. cit.* 56, fig. 5j–m; 58, fig. 6; J.Beever, B.Malcolm & N.Malcolm, *The Moss Genus Fissidens in New Zealand[:] an illustrated key* 64 (2002).

Sterile shoots to 10 mm tall. Leaves 15–25-jugate, patent, oblong-lanceolate, 0.5–1.0 mm long; apex acute; vaginant laminae usually limbate. Gametoecia axillary on barren stems, the male numerous, 0.2–0.3 mm tall, the female sparse, usually in lower leaf axils, 0.5–1.5 mm tall. Peristome as in var. *taylorii*. Spores c. 36 µm diam.

Rare in Vic. and Tas.; also in south-eastern New Zealand.

Vic.: Mt Eccles, *A.C.Beauglehole 3060* (MEL). Tas.: Pittwater Bluff, *A.Moscal 12990* (HO).

This variety is characterised by having much larger plants, with longer leaves and more numerous axillary perigonia.

Note: *Fissidens taylorii* Müll.Hal. var. *floribundus* (Wilson) Wijk & Margad., *Taxon* 8: 106 (1959); *F. brevifolius* Hook.f. & Wilson var. *floribundus* Wilson, in J.D.Hooker, *Fl. Tasman.* 2: 167 (1859). T: New Norfolk, Derwent, Tas., *Oldfield 218*; holo: BM (not located).

It is likely that the type of *F. brevifolius* var. *floribundus* is synonymous with *F. taylorii* var. *epiphytus*; it was collected from a locality not far from that of the Moscal specimen. If these prove to represent the same taxon, their correct name would be *F. taylorii* var. *floribundus*.

Fissidens taylorii Müll.Hal. var. **sainsburianus** Allison, *Trans. Roy. Soc. New Zealand* 88: 9 (1960)

Fissidens brevifolius Hook.f. & Wilson, *Fl. Nov.-Zel.* 2: 61 (1854). T: North Island, New Zealand, 1850, *W.Colenso*; holo: BM.

Fissidens elamellosus Müll.Hal. & Hampe., *Linnaea* 28: 214 (1856). T: by Yarra River, Vic., *F.Mueller*; holo: BM; iso: MEL.

Fissidens macrodus Hampe, *Linnaea* 30: 645 (1858). T: by Yarra River, Vic., *F.Mueller*; holo: BM; iso: MEL.

Sainsburia novaezelandiae Dixon, *Bryologist* 44: 40 (1941). T: Whakaki Lagoon, near Wairoa, Hawkes Bay, New Zealand, *G.O.K.Sainsbury 960*; holo: BM *n.v.*; iso: WELT *n.v.*

Illustrations: D.G.Catcheside, *Mosses of South Australia* 74, fig. 15d–f (1980), as *F. taylorii*; I.G.Stone & J.E.Beever, *op. cit.* 53, fig. 2b, d, e, g; 54, fig. 3b, d, f; 60, fig. 7; 61, fig. 8; 62, fig. 9; J.Beever, B.Malcolm & N.Malcolm, *The Moss Genus Fissidens in New Zealand[:] an illustrated key* 66 (2002).

This variety resembles var. *taylorii*, but the apical and dorsal laminae of vegetative leaves are often more reduced, and the laminal cells are slightly smaller. Vaginant laminae of perichaetial leaves entire or dentate, often elimbate in the upper part, widely bordered and entire below; distal lamina narrowly subulate; costa strong, often excurrent in a cusp. Peristome inserted well below the rim; exostome teeth ±erect, perforated, entire or weakly forked at the apex; lamellae finely papillose abaxially at the base, larger above the papillae,

often in vertical or oblique rows, adaxially above with longitudinal ridges; tips occasionally faintly spirally thickened. Spores 12–25 µm diam.

Occurs in S.A., N.S.W., Vic. and Tas. Also in New Zealand.

S.A.: Mount Crawford, *D.G.Catcheside 77.270* (AD). N.S.W.: off Tubbal Rd, 13 miles [20.8 km] from Young, *W.W.Watts 7188* (NSW). Vic.: Yarra, 1854, *F.Mueller 100* (MEL); McKillops Bridge, Snowy R., East Gippsland, *I.G.Stone 14200* (MEL). Tas.: Western Junction, Perth road, 6 Sept. 1888, *W.A.Weymouth* (HO).