

Fissidens crenulatus Mitt., *J. Proc. Linn. Soc., Suppl.* 1: 140 (1859)

Type: Nepal, *N. Wallich*; holo: NY.

Plants small, yellowish green to green, 2–4 mm tall, 1–2 mm wide with leaves. **Stems** usually simple, unbranched; in section with an indistinct central strand. **Leaves** in up to 20 pairs, contiguous, lanceolate to oblong-lanceolate, 1.0–1.8 mm long, 0.2–0.3 mm wide; **apex** acute to acuminate. **Vaginant laminae** reaching to beyond mid-leaf, \pm closed; **limbidium** extending to the apex of vaginant laminae or ending below it, 2–6 cells wide, hyaline; cells thick-walled, \pm prosenchymatous; **dorsal lamina** abruptly rounded at the base or tapering to the costa; **margins** crenulate-serrulate; **lamina cells** \pm rounded-hexagonal, (4–) 6–8 (–10) μ m wide, slightly larger in the vaginant laminae, pellucid with slightly thickened walls, convex, bluntly or acutely unipapillose (occasional cells bipapillose). **Costa** of *bryoides*-type, percurrent to excurrent.

Polyicous. Male shoots similar to female shoots, or with axillary male branches or perigonia bud-like in axils of leaves. **Perichaetial leaves** slightly narrower and longer than stem leaves. **Setae** terminal and/or from a basal shoot, short, 2–3 (–5) mm long, indistinctly scabrous. **Capsules** erect, symmetrical; theca 0.3–0.6 mm long; **exothecial cells** distinctly collenchymatous. **Operculum** domed-rostrate, 0.4–0.6 mm long. **Peristome** of *bryoides*-type. **Calyptra** campanulate or mitriform. **Spores** 13–17 μ m diam.

Occurs at low altitudes in north-eastern Qld, from Cape Tribulation to south of Cardwell.

Also known from India, Nepal, China, Japan, SE Asia, Malesia and the Philippines.

Two varieties are known from Australia.

Limbidium multistratose, usually reaching to the top of the vaginant laminae; costa usually distinctly excurrent; perigonia mostly bud-like in leaf axils var. **crenulatus**

Limbidium unistratose, mostly reaching only half the length of the vaginant laminae; costa usually percurrent; perigonia terminal on separate shoots or axillary near the apex of a female plant var. **elmeri**

Fissidens crenulatus Mitt. var. **crenulatus**

Illustrations: H.C.Gangulee, *Mosses of Eastern India* 504, fig. 235 (1971); Z.-H.Li, *Acta Bot. Fennica* 129: 32, fig. 14a–1 (1985).

Leaves to c. 1.4 mm long and 0.35 mm wide, c. 4 times as long as wide. **Vaginant laminae** to c. 3/5 leaf length; **limbidium** strong, 2–6 cells wide, 1–3 cells thick, reaching or almost reaching the top of the vaginant laminae. **Costa** distinctly excurrent.

Autoicous. **Perigonia** bud-like in lower leaf axils of a sterile shoot, rarely terminal. **Perichaetia** terminal or lateral; terminal perichaetia with leaves c. 1.5 mm long and 0.3 mm wide; lateral perichaetia with 3 or 4 leaves, bud-like, c. 0.5 mm tall, the perichaetial leaves c. 0.5 mm long, with greatly reduced apical laminae. **Setae** to 5 mm long, smooth to indistinctly scabrous. **Calyptra** campanulate or mitriform, flared at the base, c. 0.45 mm long, \pm smooth.

Images

Occurs in north-eastern Qld; usually growing on sandy soil

Also in Nepal, India, SE Asia, Malesia, the Philippines and China.

Selected specimens examined:

Fissidens crenulatus Mitt. var. **elmeri** (Broth.) Z.Iwats. & Tad.Suzuki, *J. Hattori Bot. Lab.* 51: 386 (1982)

Fissidens elmeri Broth., *Leafl. Philipp. Bot.* 2: 652 (1909). Type: Dumaguete, Cuernos Mtns, Negros, Negros Occidental Prov., Philippines, of bark, June 1908, *A.D.F.Elmer 10320*; holo: H-BR; iso: L.

Illustrations: E.B.Bartram, *Philipp. J. Sci.* 68: 18, pl. 1, 10 (1939), as *F. elmeri*; Z.Iwatsuki & T.Suzuki, *J. Hattori Bot. Lab.* 43: 393, fig. 7 (1977), as *F. elmeri*; Z.Iwatsuki & T.Suzuki, *J. Hattori Bot. Lab.* 51: 469, pl. 23, figs 1–30 (1982); Z.-H.Li, *Acta Bot. Fennica* 129: 32, fig. 14j–q (1985).

Leaves similar to var. *crenulatus* but mostly less than 1.2 mm long, to c. 0.3 mm wide. **Vaginant laminae** of vegetative leaves with a limbidium of 1–3 rows of cells, unistratose, usually reaching c. 1/2 leaf length. **Costa** percurrent to slightly excurrent.

Dioicous or **autoicous**. **Perigonia** either on separate shoots or as short shoots at the stem apex with perichaetia. **Perichaetial leaves** slightly longer and narrower than stem leaves. **Setae** terminal, scabrous, c. 2.5–3.0 mm long. **Calyptra** variously scabrous with prorate cells.

[Images](#)

Occurs in north-eastern Qld; growing on rock or as an epiphyte.

Also in SE Asia, Malesia, the Philippines, China and Japan.

[Selected specimens examined:](#)

The var. *elmeri* is characterised by its probably dioicous inflorescence, terminal perigonia, scabrous setae, and slightly scabrous calyptrae. The scabrous nature of the seta is best seen in transverse section.

Eddy (1988) noted that the extent of the limbidium can vary “between populations, between individuals of a population or even, on occasion, between different parts of the same plant. On the other hand, the varying patterns of sexuality that have been reported for this species (sens. lat.) may have greater significance.”

Fissidens hollianus has similar morphology, but it differs by having 4 or 5 papillae on the lamina cells, lateral perigonia and shorter setae (1.2–1.9 mm vs 2.5–5.5 mm).

Further detailed study of a wide range of specimens is needed to fully comprehend the variability of *F. crenulatus* and its relationship with *F. hollianus*.

[Bibliography](#)