

**FISSIDENTACEAE**  
(M.A. Bruggeman-Nannenga)

A monotypic family, placed in the order Fissidentales.

**Fissidens** (Fig. XX)

About 90 species in Africa, estimated at 450 species distributed worldwide but absent in arid regions.

**Plants** very small to large, 0.3--10 cm long, mostly erect, forming mats, tufts or growing scattered, dull to bright green, reddish- or brownish-green, rarely, blackish-green. **Stems** simple to branched; in cross-section central strand present or absent. **Leaves** 2-ranked (distichous), median and upper leaves elliptico-lanceolate, oblong-lanceolate, less often lingulate, 0.4 --7 mm long, composed of **vaginant laminae** (sheathing), **dorsal** (extending the length of the back part of leaf), and **ventral or apical** (above the vaginant laminae) **lamina**, (in *Fissidens gladiolus* dorsal and ventral laminae can be lacking); margins entire, crenulate, denticulate or serrulate to irregularly sharply serrate or even spinose, elimbate or limbate, when limbate the limbidium uni- to multistratose, marginal or (partly) intralaminar and present on all laminae to restricted to (part of) the vaginant laminae of all or some leaves; **costa** single, usually strong, sometimes branched at apex,  $\frac{1}{2}$ -- $\frac{2}{3}$  of the leaf length to percurrent or short to long excurrent, lacking or weak in some species, sometimes obscured by overlying chlorophyllose cells; **laminal cells** flat, convex, conical, sometimes lenticularly thickened, smooth or uni- or multipapillose, border cells when present linear and smooth. **Gemmae** mostly absent or present in leaf axils, on leaf tips or one the rhizoids. **Autoicous**, synoicous or dioicous, often polyoicous. **Perichaetia** terminal, occasionally lateral, leaves often differentiated. **Seta** usually 1 per perichaetium, 0.1--10 mm long, erect or variously curved, smooth, infrequently papillose. **Capsule** exserted, rarely emergent or immersed, erect to horizontal, urn ovoid to cylindrical, 0.3--2.0 mm long; annulus absent; exothecial cells short to long rectangular, often collenchymatous, longitudinal walls often thickened; stomata at urn base, superficial. **Operculum** conic, short to long rostrate. **Peristome** single, teeth 16, divided to half or more below, occasionally undivided or imperfectly divided, striate or papillose. **Calyptra** cucullate or short mitrate, naked, smooth or roughened. **Spores** oblate, smooth or papillose.

**HABITAT.** Mostly in shaded, moist places in forests, entrances of caves, spray of waterfalls and along rivers, a few species truly aquatic, growing on soil, rocks, termite mounds, lower trunks of trees, branches, dead wood, rarely epiphyllous, in moist or wet lowland to high montane forests from near sea level to 3600 m.

**DISCUSSION.** The distichous leaf arrangement and distinctive morphology of the leaves exhibiting vaginant laminae and dorsal and ventral laminae is diagnostic for the genus. Confusion with other genera is not likely, except in the case of *Fissidens gladiolus* Mitt. in which the dorsal and ventral lamina may be absent; in that state it has been described in *Anisothecium* (Dicranaceae). It can be recognized as a *Fissidens* by its peristome. Moreover, examination of more plants will usually reveal the presence of some leaves with traces of a dorsal lamina. The recent treatment by Magill (1981, see general references) will help to identify southern species. Other recent publications that will assist are Bruggeman-Nannenga (1993, 1979 and 1999).

**Study guide.** Leaves features are most important for identifying species. Important characters are the presence or absence of a limbidium and its extension. In some species perichaetial leaves must be present to determine if a border is present. Further

features to note include the ornamentation of cell walls (smooth, lenticularly thickened, mammillose, unipapillose or multipapillose), the presence or absence of large axillary nodules, guttulae in the leaf cells and the type of peristome. A cross-section of leaves is desirable, including the vaginant lamina, to determine cell ornamentation and if the limbidium is uni-, bi- or multistratose (the number of border cell layers and the ornamentation can, with practice, be determined simply by focusing up-and-down at high power on an intact leaf).

LITERATURE. **Bruggeman-Nannenga, M.A. 1993.** Taxonomic results of the BRYOTROP expedition to Zaire and Rwanda 15. Fissidentaceae. *Tropical Bryology* 8: 141-148. **Bruggeman-Nannenga, M.A. 1997.** Notes on *Fissidens* VI. New Synonyms, new combinations and validation of some names. *Journal Hattori Botanical Laboratory* 81: 155-173. **Bruggeman-Nannenga, M.A. 1999.** Notes on Seychelles Mosses. 2 A revision of Fissidentaceae. *Bryobrothera* 5: 65-75. **Bruggeman-Nannenga, M.A. & W. Berendsen. 1990.** On the peristome types found in the Fissidentaceae and their importance for the classification. *Journal of the Hattori Botanical Laboratory* 68: 193-234. **Bruggeman-Nannenga, M. A. & R. A. Pursell. 1990.** The *Fissidens radicans* complex (Section *Amblyothallia*) in the Neotropics and Paleotropics. *The Bryologist* 93: 332-340. **Bruggeman-Nannenga, M. A. & R.A. Pursell. 1995.** Notes on *Fissidens* V. *Lindbergia* 20: 49-55. **Bruggeman-Nannenga, M.A., Pursell, R.A. & Z. Iwatsuki. 1994.** A re-evaluation of *Fissidens* subgenus *Serridium* section *Amblyothallia*. *J. Hattori Bot. Lab.* 77: 255-271. **Pursell, R.A. 1987.** A taxonomic revision of *Fissidens* subgenus *Octodiceras* (Fissidentaceae). *Memoirs of the New York Botanical Garden* 45: 639-660. **Pursell, R.A., Bruggeman-Nannenga, M.A. & Z. Iwatsuki. 1992.** Species of *Fissidens* (Fissidentaceae, Musci) common to the Neotropics, Asia and Africa. *Bryobrothera* 1: 49-55. **Pursell, R.A., Bruggeman-Nannenga, M.A. and Z. Iwatsuki. 1993.** The identity of *Fissidens gardneri* and *Fissidens minutus*. *Bryologist* 96: 626-628.