Cryptogamie, Bryologie, 2004, 25 (4): 309-313

Fissidens unipapillosus sp. nov. and *F. palmifolius* var. *semilimbatus* var. nov. (Musci, Fissidentaceae) from Uganda

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(Received 10 March 2004, accepted 7 May 2004)

Résumé – *Fissidens unipapillosus* sp. nov. et *F. palmifolius* (P. Beauv.) Broth. var. *semilimbatus* var. nov., nouveaux taxons d'Uganda, sont décrits et illustrés.

Musci / Fissidentaceae / *Fissidens* / taxons nouveaux / Afrique

Abstract – Two new Fissidens taxa from Uganda, viz. *Fissidens unipapillosus* sp. nov. and *F. palmifolius* (P. Beauv.) Broth. var. *semilimbatus* var. nov., are described and figured.

Musci / Fissidentaceae/ *Fissidens* / new taxa / Africa

INTRODUCTION

During my work on the Fissidens part of the "Uganda mosses and liverworts" project of the Tropical Bryology Group of the British Bryological Society, I discovered two undescribed taxa. These are a new species, *Fissidens unipapillosus* (subgenus *Aloma* Kindb.), and a new variety, *Fissidens palmifolius* (P. Beauv.) Broth. var. *semilimbatus* (subgenus *Octodiceras* (Brid.) Broth.). Both taxa are described in the present note.

DESCRIPTION OF NEW TAXA

Fissidens unipapillosus Brugg.-Nann., **sp. nov**. (Fig. 1)

Diagnosis – Fissidens unipapillosus *foliis limbo circumductis* Fissidente angustifolio *et* F. weirii *similis. A* Fissidente angustifolio *cellulis laminarum minoribus et a* Fissidente weirii *cellulis laminarum unipapillosis differt.*

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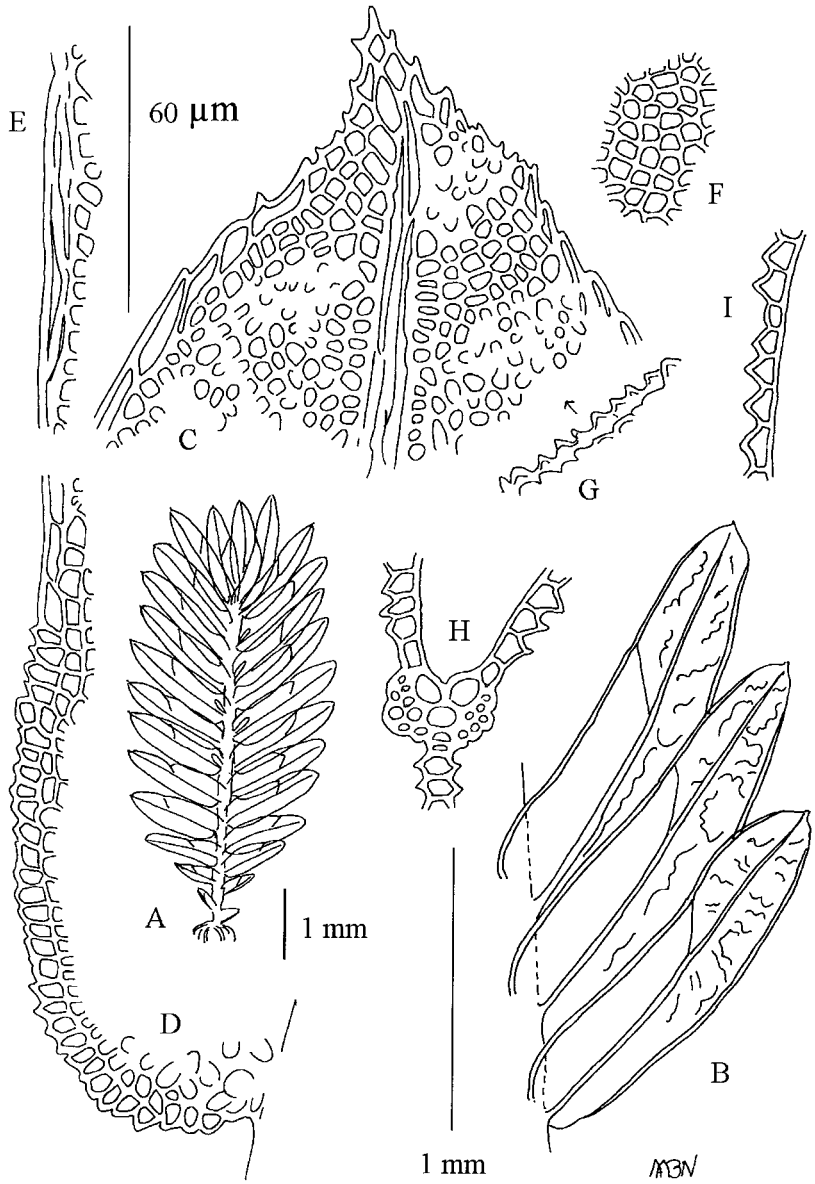

Fig. 1. *Fissidens unipapillosus* Brugg.-Nann. — **A.** Plant with naked, axillary antheridia. **B.** Leaves. **C.** Leaf apex. **D.** Base of dorsal lamina. **E.** Limbidium in mid-dorsal lamina. **F.** Laminal cells of mid-dorsal lamina. **G.** Side view cells (leaf fold). **H.** Cross-section of leaf. **I.** Cross-section of vaginant lamina. (All from holotype, BM).

Type – **Uganda. Masindi District**: Budongo Forest, Royal Mile, 1˚42' N, 31˚32' E, on soil deposited on log, 1060 m. 24 I 1997, *M.J. Wigginton U 3106A* (mixed with some *F. intromarginatus* (Hampe) Mitt.) (Holotype: E; isotype: U).

Description – **Plants** growing in mats, green, stems 4-7 mm long and 2.2 mm wide with leaves, unbranched, pinnately foliated with as many as 20 pairs of leaves, central strand of 9-13 large cells with thin, infrequently pigmented walls, 2-3 tiers of inner and 2-3 tiers of whitish cortical cells. **Rhizoids** basal, pale brown, smooth. **Axillary nodules** weakly differentiated. **Leaves** green, crispate when dry, undulate when wet, oblong, widely acute to rounded obtuse, often apiculate, 1.3-1.8 mm long, 0.3-0.35 mm wide, 4.5-5 times as long as wide, margin denticulate near apex and at base of dorsal lamina, **limbate** on all laminae of all or most leaves, limbidium marginal, ending below apex and far above insertion of dorsal lamina, confluent at junction of vaginant laminae, reaching insertion of vaginant laminae, 9 µm wide in median part of dorsal lamina, on vaginant laminae to 3 cells (10.5 µm) wide, bistratose. **Vaginant laminae** 3/4 leaf length, at base about as wide as stem, rounded at insertion, not decurrent, reflexed at margins, acute at apex, unistratose, slightly unequal, strongly unequal in some perichaetial leaves. **Dorsal lamina** rounded at base, reaching insertion, not decurrent. Dorsal and **apical lamina** unistratose. **Costa** stout, percurrent to excurrent, in cross-section with 2 large adaxial cells and 1 large central cell (*bryoides*-type), lateral epidermis not differentiated, 1 row of 2 large cells above the vaginant laminae. **Laminal cells** uniform throughout, round-quadrate, mid dorsal laminal cells isodiametric, 3-4.5 µm in diameter, strongly bulging, highly and sharply unipapillose, infrequently bipapillose. **Polyoicous: gonioautoicous, dioicous** and **synoicous**. **Perigonia** axillary on perichaetial or separate plants, or naked antheridia solitary or in pairs in leaf axils, in upper axils often with a single archegonium, antheridia 120-200 µm long; **perichaetia** terminal, archegonia 200-300 µm long; **perichaetial leaves** 1.4-1.7 mm long. **Seta** 3 mm long, smooth, **capsule** inclined, 0.7 mm long and 0.35 mm wide, exothecial cells in ± 32 files, quadrate, collenchymatous, slightly bulging. **Peristome** *scariosus*-type, basal inner peristome lamellae fimbriate, teeth 45 µm wide at base. **Operculum** rostrate, 0.5 mm long. **Calyptra** scabrous, mitrate, 0.55 mm long. **Spores** smooth, 9-13.5 µm long.

Additional specimens seen (paratypes) – **Kampala District**: Mpanga Forest Reserve, on bank of old sawpit in rainforest, 3 VIII 1955, *Jones 580* (K, BM); on earth of path in shade, *Jones 603A* (BM); Mulange, damp soil, 1220 m, 19 IV 1919, *Dummer 4009* (BM); West Nile District, Budonga forest, on ants' nest by roots of tree, 15.VII.1953, *Chanchellor 13* (BM); Damba Island II, on earthy tree bases and an ant heap, *Wood s.n.* (BM).

Discussion – The new species resembles *Fissidens angustifolius* Sull. in its limbate leaves and unipapillose lamina cells. *F. unipapillosus*, however, has pinnately arranged, undulate leaves and dorsal laminae that are rounded below, whereas *F. angustifolius* is flabelliform with flat leaves and dorsal laminae that taper towards the insertion. Moreover, *F. unipapillosus* has smaller laminal cells (3-4.5 × 3-4.5 µm). Mid dorsal laminal cells of *F. angustifolius* are 7.5-10.5 µm long and 4.5-7.5 µm wide, and basal juxta-costal laminal cells of the vaginant laminae are 15-25.5 µm long. *Fissidens weirii* resembles the new species in general aspect and in having limbate leaves, but its laminal cells are pluripapillose.

Fissidens. unipapillosus, as well as *F. weirii* and *F. angustifolius,* belong within *Fissidens* subgenus *Aloma* which is characterized by having thecae with *ca* 32 files of exothecial cells, *scariosus*-type of the peristome (Bruggeman-Nannenga & Berendsen, 1990), and *bryoides*-type of the costa (Bruggeman-Nannenga, 1990; Pursell & Bruggeman-Nannenga, 2004).

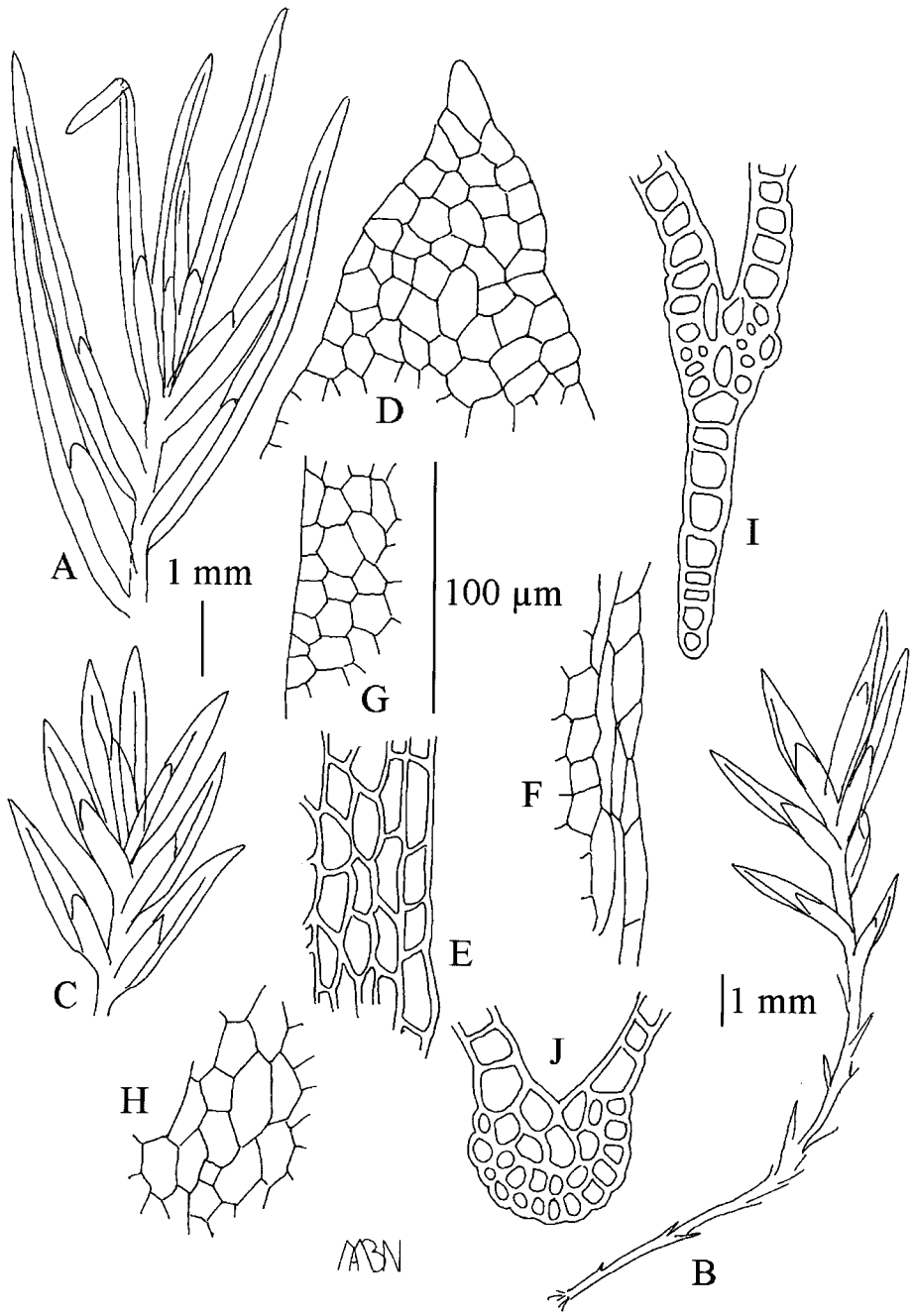

Fig. 2. *Fissidens palmifolius* (P. Beauv.) Broth. var. *palmifolius* (A) and var. *semilimbatus* Brugg.-Nann. (B-J). — **A, C.** Leaves. **B.** Habit. **D.** Leaf apex. **E.** Margin of vaginant lamina at insertion. **F.** Limbate margin of vaginant lamina. **G.** Margin of mid-dorsal lamina. **H.** Laminal cells in mid-dorsal lamina. **I.** Cross-section of leaf. **J.** Cross-section of basal part of leaf. (A from *Brewster 57*, BM; B-J: from holotype of var. *semilimbatus*).

Distribution – Uganda, Kampala, Masindi and West Nile Districts, at 1220 m, according to available label data.

Habitats – Damp soil, ants' nest, bank of saw pit, earth in shade, on soil on log.

Fissidens palmifolius (P. Beauv.) Broth. var. ***semilimbatus*** Brugg.-Nann., **var. nov**. (Fig. 2B-J)

Diagnosis – *A varietate* palmifolio *foliis brevioribus, 2.5-3.5 mm longis, laminis dorsalibus plerumque longe supra insertionem terminantibus et laminis vaginantibus saepe limbatis differt.*

Type – **Uganda**, R. Mpanga, Fero, on rocks, 4500 ft, 3-5 Nov. 1935, *Thomas 1423-b* (Holotype: BM).

Description – This variety differs from var. *palmifolius* (Fig. 2A) in its shorter leaves that are about half as long as those in the typical variety (2.5-3.5 mm versus 5-9 mm), a dorsal lamina that usually ends far above the insertion, and vaginant laminae that are typically weakly limbate. Vaginant laminae of var. *palmifolius* are elimbate and its dorsal laminae reach the insertion.

Distribution – Known from the type-locality only.

Note – Nice illustrations and a description of *Fissidens palmifolius* (P. Beauv.) Broth. var. *palmifolius* are provided by Pursell (1987).

Fissidens palmifolius belongs in subgenus *Octodiceras* which is characterized by long, weak floating stems without central strand, flaccid linear lanceolate leaves with *bryoides*-type costae, short setae, and reduced *bryoides*-type peristomes (Pursell, 1987; Pursell and Bruggeman-Nannenga, 2004).

Acknowledgement. I am grateful to Dr R.A. Pursell for critically reading the manuscript.

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