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Taxonomic Results of the BRYOTROP Expedition to Zaire and Rwanda
15. Fissidentaceae

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Abbreviations:

* New record for Rwanda viz. Zaire
KB: Kahuzi-Biega (Zaire)
Ka: Karisimbi (Rwanda)
Ny: Nyungwe Forest (Rwanda)
Ak: Akagera region (Rwanda)
100-171, number of collecting site.
For locality data and a description of the collecting sites see the contribution by E. Fischer on the vegetation of the study area in this volume (Tropical Bryology 8: 13-37, 1993). The specimens are deposited at the Botanical Museum Berlin (B) as well as in the herbarium of the author (except for unicates)..

Fissidens Hedw.

KEY (provisional)
Note that both 15 and 18* refer to 16.

1 Leaves without costa.....2
1* Leaves costate.....3

2 Border of 1 - 2 rows of cells that are longer and narrower than other leaf cells; often with gemmae on the leaves.....*F. bryum*
2* Marginal cells smaller than other leaf cells; without gemmae.....*F. usambaricus*

3 Limbidium present..... 4
3* Limbidium absent.....17

4 Limbidium present on all laminae.....5
4* Limbidium present only on vaginant lamina.....10

5 Leaf cells smooth, flat or bulging.....6
5* Leaf cells papillose.....8

6 Dorsal and apical lamina with a thickened margin consisting at least in part of short wide cells.....*F. porrectus*
6* Dorsal and apical lamina with limbidium of long and narrow cells.....7

7 Limbidium ending distinctly below the apex.....*F. leucocinctus*
7* Limbidium nearly or completely reaching the apex; often confluent with the nerve at the apex.....*F. bryoides*

8 Leaves undulate.....*F. glauculus*
8* Leaves not undulate.....9

9 Leaves completely limbate, leaf cells obscured by papillae.....*F. glaucissimus*
9* Most leaves with a limbidium on vaginant lamina and basal part of apical lamina only, rarely with a short limbidium in the middle of the dorsal lamina, leaf cells papillose, not obscured by papillae.....*F. intramarginatus*

10* Limbidium present on vaginant laminae of all or almost all leaves..... 11
10* Limbidium mostly restricted to the vaginant laminae of upper leaves of fertile stems..... 15
11 Leaf cells smooth.....12
11* Leaf cells papillose.....13

12 Margin of dorsal laminae swollen and bistratose, often with a few long and narrow cells, limbidium strongly developed..... .....*F. porrectus*
12* Margin of dorsal laminae not swollen, limbidium weak.....*F. laxus*

13 Limbidium intralaminal, not extending over the whole length of the vaginant laminae.....*F. borgenii*
13* Limbidium marginal normally reaching the tip of the vaginant laminae and often extending into the apical lamina.....14

14 Leaves undulate.....*F. glauculus*
14* Leaves not undulate.....*F. intramarginatus*

15 Leaf cells papillose.....16
15* Leaf cells smooth, flat or bulging..... 18

16 Leaves 1.1 - 1.5 mm long; 3 - 4 times as long as wide; stem often reddish..... .....*F. purpureocaulis*
16* Leaves shorter, up to 1.1 mm long.....17

17 Leaves 3 - 5 times as long as wide*F. borgenii*
17* Leaves 2.5 - 3 times as long as wide..... ..... *F. sciophyllus*

18 Leaf cells smooth.....19
18* Leaf cells papillose.....16

19 Minor lamina of the vaginant laminae ending at or near the costa, leaves 2 - 3 mm long.....*F. asplenioides*
19* Minor lamina of vaginant laminae ending on lamina, leaves less than 1.5 mm long.....20

20 Ubiquitous, leaf cells flat often with guttulae, costa in cross-section with two stereid bands .....*F. laxus*
20* lignicolous, leaf cells bulbose, without guttulae, costa in cross-section with three stereid bands.....*F. microcarpus*

* ***F. asplenioides*** Hedw. Spec. Musc.: 156, 1801. *F. amblyophyllus* C. Muell. Hedwigia 38: 457, 1899. Syntypes: **SOUTH AFRICAN REPUBLIC**, *Rehmann* Musc. Austro-africani *285* and *285B* (PC) (both as *F. glaucescens* var. *natalensis* Rehm., nom. nud.)

This species is characterized by 1) elimbate leaves that are strongly curled at the tip when dry, 2) obtuse leaf tips, 3) a costa that ends 5-10 cells below the leaf tips, 4) bulbose leaf cells, 5) unequal vaginant laminae with minor lamina ending at or near the costa and 6) long and narrow marginal cells at the base of the vaginant laminae.

Distribution: Pantropical species, in Africa known from the Western Indian Ocean region, Southern Africa, South, East, West Central and West Tropical Africa and Madeira. Terrestrial, saxicolous and lignicolous. At altitudes from 0 - 3500 m.

Ny: 104, *Frahm 6204*; 113, *Frahm 6490*. **Ka**: 161, *Frahm 8071*.

* ***F. microcarpus*** Mitt., J. Linn. Soc. Bot. 7: 162, 1863; Bruggeman-Nannenga & Pursell, Bryologist 93: 339, 1990.

This species is characterized by: 1) elimbate leaves, 2) bulbous leaf cells, 3) a costa that ends 10 - 20 cells below the leaf tips, 4) peristome teeth that are usually undivided and 5) a corticolous habitat. It differs from *F. asplenioides*, which belongs in the same section, in the shorter, 1.2 - 1.5 mm long, leaves (2 - 3 mm long in *F. asplenioides*), in the marginal cells at the base of vaginant lamina are similar to other leaf cells (and not long and narrow) and in the mostly undivided peristome teeth.

Distribution. Known from West, Northeast, West Central and East Tropical Africa. Corticolous, found between 0 - 1500 m altitude.

ZAIRE, Irangi F. S.: 126, *Frey & Kürschner 6705 (91-108)*.

*** F. bryoides** Hedw. s.l.
F. simensis Schimp. ex C. Muell., Bot. Zeit. 22: 34, 1864 - Type: **ETHIOPIA**, Mons Bachit, *Schimper* (PC, BM) - syn. nov.
F. longipes Welw. & Duby in Duby, Mem. Soc. Phys. Hist. Nat. Genève 21: 224, 1871 (1870) - Type: **ANGOLA**: *Welwitsch*, Iter Angolense *69* (BM) - syn. nov.
F. platybryoides var. *subimmarginatus* Dixon in Naveau, Bull. Soc. R. Bot. Belg. 60: 13, 1927 - Type: **ZAIRE**: steppe à Andropogon, sur une pierre calcaire. 24. 9. 14, c. fr., *Bequart 5857* (BM, same label, but *Bequart 438*)
F. crateris Dix., J. Bot. 76: 219, 1938 - Type: **KENYA**, Crater of Mt Longonot, *Dummer 5049 B* (BM) - syn. nov.
F. crateris Dix. var. *sererekae* Dix, J. Bot. 76: 220, 1938 - Type: **KENYA**, Serereka, *Balbo 63* : 29 I 1908 (BM) - syn. nov.
F. pachylomadelphus Dem. & Pot. Varde, Bull. Jard. Bot. Bruxelles 27: 758, 1957- Type: **ZAIRE**, Ruwenzori, *Demaret 5997* (holotype: BR; isotype: PC) - syn. nov.
F. leucocinctus non Hampe sed Pot. Varde, Trans. Brit. Bryol. Soc. 3: 1956: 89.

The African form of this taxon is characterized by 1) limbate leaves, 2) a limbidium that reaches or nearly reaches the leaf tip, 3) flat to bulging, but always smooth leaf cells, 4) a dorsal lamina that is mostly decurrent and 5) terminal antheridia. Typically the vaginant laminae are equal.
I follow Magill (Fl. South. Afr.: 68 1981) who called this taxon *F. bryoides* Hedw., but not without the following observations. *F. bryoides* Hedw. is extremely variable with respect to the position of the antheridia. For instance *F. bryoides* ss has axillary antheridia, whereas *F. bryoides* expression *viridulus* has terminal ones. African specimens invariably have terminal antheridia and could be therefore be expression *viridulus*. However, almost all African specimens differ from this expression in that the dorsal lamina is extends down the stem.
Remark: several other closely related taxa occur in Africa. These will be dealt with in a future paper.
Distribution: West Tropical, Northeast Tropical, East Tropical, West Central Tropical and Southern Africa. Terrestrial, saxicolous and lignicolous, sometimes hydrophilous. Alt. 700 - 3650 m.

KB: 44, *Frahm 7577*. **Ny**: 103, *Pócs 6156, 6157*; 104, *Pócs 6190, Frahm 6203*. **Ka:** 162, *Pócs 8160*. Between Ruhengeri and 169: *Pócs 8064.*

* ***F. leucocinctus*** Hampe, Linnaea 38: 222, 1874 - Type: **MADAGASCAR**, *Borgen* s.n. (PC).
F. crispopachyloma Dix. J. Bot. 76: 220, 1938 - Type: **KENYA**, *Balbo 127* (BM) - syn. nov.
F. pauperrimus C. Muell. in Muell. & Geh., Hedwigia 38: 213, 1899. hom. illeg. - Type: **AFRICA AUSTRALIS**, *Rütenberg*, 1877 (PC) - syn. nov.
F. rutenbergii Par. Ind. Bryol. Suppl.: 164, 1900 (new name for *F. pauperrimus)* - syn. nov.
F. malacobryoides C. Muell. var. *irriguus* Pot. Varde, Rev. Bryol. Lich. 25: 213, 1956 - Type: **UGANDA**, *Lind 128* (PC)- syn. nov.

This species can be recognized by 1) the strong limbidium on all three laminae that ends above the insertion of the dorsal lamina and rather far below the leaf tips, 2) smooth leaf cells and 3) the usually bistratose bases of the dorsal laminae. This species is closely related to *F. crassipes* subsp. *warnstorfii* (Fleisch.) Brugg.-Nann. and may be a well bordered form of it.

Distribution: Madagascar, Tanzania, Kenya, Uganda and Zaire (Kivu). The occurrence of this species in the South African Republic is questionable since the only collection from that area is the type collection of *F. pauperrimus*, which may have been collected elsewhere (Magill, Fl. South. Afr.: 68 1981). Saxicolous in places that are regularly inundated. At altitudes from 850 to 2000 m.

KB: 119, *Pócs 6613*.

** ***F. porrectus*** Mitt., Trans. Linn. Soc. London 23: 56, 1860. Type: **Niger**-exp., *Barter 1425* (BM, NY, PC) *F. nitens* Rehm. ex Salm., Ann. Bot. 13, 122, 1899 - Type: **SOUTH AFRICAN REPUBLIC**, *Rehmann* Musci Austro-afr. *289* (BM, PC) - syn. nov.
F. nitens var. *neglectus* Rehm. ex Salm., Ann. Bot. 13, 122, 1899 - Type: **TANZANIA**, *Holst 3472* pp (BM) - syn nov.
F. rufolimbatus Card., Rev. Bryol. 35: 65, 1908 - Type: **ZAIRE**, Sankuru, *Laurent* s.n. (H-Br, PC) - syn. nov.
F. pachylomoides Pot. Varde, Rev. Bryol. 4: 57, 1931 - Type: **GABON**, *Le Testu 6840* (PC, BR, BM (as *F. porrectoides*)) - syn. nov.
F. rufolimbatus Card. var. *torrentium* Pot. Varde, Rev. Bryol. 4: 59, 1931 - Syntypes: **GABON**, *Le Testu 6862* (PC), *6866* (PC), *6668* (PC) - syn. nov.
F. pachylomoides Pot. Varde var. *subdenticulatus* Pot. Varde, Rev. Bryol. Lich. 5: 193, 1932 - Type: **GABON**, *Eckendorff* s.n., Oct., 1931 (PC, NY) - syn. nov.
F. rufolimbatus Card. var. *latifolius* Pot. Varde, Rev. Bryol. Lich. 8: 52, 1935 - Type: **GABON**, Mont Loumanzoc, *Le Testu* s.n. (PC) - syn. nov.
F. rufolimbatus Card. var. *ramosus* Pot. Varde, Rev. Bryol. Lich. 8: 52, 1935 - Type: **GABON**, rocher de Nzang, *Le Testu* s.n. (PC) - syn. nov.
F. schnellii Pot. Varde, Rev. Bryol. Lich, 18: 105, 1949 - Type: **GUINEA**, *Schnell 2620* (BM, PC).
F. woodii Tayl. & Pot. Varde, Rev. Bryol. 25: 215, 1956 - Type: **UGANDA**, *Wood 1048* (PC) - syn. nov.

This species is characterized by 1) a limbidium on the vaginant lamina of all leaves, but sometimes found on only the perichaetial leaves. Usually the vaginant laminae of all leaves are limbate, 2) by smooth leaf cells with or without guttulae. When present, a thickened margin of short, wide cells on the apical and dorsal lamina, is also characteristic. However, in many collections there is a limbidium instead. These two extremes, limbate leaves and leaves with a thickened marginal zone, are connected by transitional forms. Specimens with a limbidium on all laminae are similar to species in section *Fissidens*. There are, however, two reasons to place *F. porrectus* in section *Aloma*: it has a scariosus type peristome and the leaf cells often contain guttulae. *F. porrectus* is closely related to *F. mariei* Besch., *F. splendens* Brugg.-Nann. and *F. letestui* Pot. Varde, which also have a differentiated border zone that consists at least in part of short, wide cells. *F. mariei* and *F. splendens* never have limbidium cells at all.

Distribution: West, West Central and East Tropical Africa, Southern Africa and Madagascar. On rocks, wood or soil. Between 0 - 2100 m altitude.

Ny: 106, *Frahm 6286*; 108, *Frahm 6330 pp, Pócs 6353 pp*; 113: *Pócs 6481*. **KB.**: 119, *Pócs 6874 pp, 6875 pp*; 123, *Pócs 6763, 6769 pp, Pócs 7798 pp*; 124, *Pócs 6780 pp, 6789*; 125, *Pócs 6724, 6743 6744*; 126, *Pócs 6831 pp, 6844 pp*. **Ka**: 152, *Pócs 7799, 7823*.

** ***F. laxus*** Sull. & Lesq., Proc. Am. Ac. Arts Sc. 4: 276, 1859.
F. ripensis Mitt., Trans. Linn. Soc. London 23: 55, 1860 (1862) - Type: **Niger** expedition, *Barter* s.n. (PC) - syn. nov.
F. cryptarum C. Muell., Linnaea 39: 352, 1875 - Type: **SUDAN**: Bongo-regiones, *Schweinfurth* s.n. (PC) - syn. nov.
F. calabariae C. Mueller ex Dusén, K. Svensk Vet. Ak. Handl. 28: 10, 1895 - Type: **NIGERIA**, *Dus_ n* s.n., VII 1892 (PC) - syn. nov.
F. holstii Broth., Bot. Jahrb. 20: 18, 1895 - pp: syntype: **TANZANIA**, *Holst 9195* (H-Br) - syn. nov.; the other syntype: **TANZANIA**, *Holst*

3472 (H-Br, BM, S) is probably an unipapillose form of *F. mariei* Besch.
F. grandiretis Ren. & Card. in Ren., Prodr. Fl. Bryol. Madag.: 115, 1898, and Act. Soc. Linn. Bordeaux 53: 19, 1898 - Type: **MADAGASCAR**, Andriba. Comm. *Dorr*, 1897 (PC) - syn. nov.
F. dispersus Card., Rev. Bryol. 36: 17, 1909 - Type: **ZAIRE**, *Vanderyst* s.n., 1907 (PC) - syn. nov.
F. propinquus Pot. Varde, Bull. Soc. Bot. France 72: 352, 1925: 352 - Type: **GABON**, *Le Testu 5337* (PC) - syn. nov.
F. rivicola Broth. & Pot. Varde in Pot. Varde, Arch. Bot. 3: 3, 1929 - Type: **CENTRAL AFRICAN REPUBLIC**, Tudyego, *Tisserant* s.n. (PC) - syn. nov.
F. linderi Pot. Varde in Thér., Rev. Bryol. n.s. 3: 44, 1930 - Type: **LIBERIA**, *Linder 836* (PC) - syn. nov.
F. rivicola Broth. & Pot. Varde var. *gabonensis* Pot. Varde, Rev. Bryol.n.s. 4: 64, 1931 - Type: **GABON**, *Le Testu 6931* (PC) - syn. nov.
F. holstii Broth. var. *perintegrifolius* Pot. Varde, Rev. Bryol. n.s. 4: 62, 1931 - Type: **GABON,** *Le Testu 6797* (PC, S) - syn. nov.
F. taeniocladus Pot. Varde, Rev. Bryol. n.s. 4: 64, 1931 - Type: **GABON**, *Le Testu 6931* (PC) - syn. nov.
F. palvadeaudi Biz., Rev. Bryol. Lich. 40: 106, 1974 - Type: **CONGO**, *Assel 849* (PC) - syn. nov.
F. ghanae Biz., Rev. Bryol. Lich. 40: 105, 1974 - **GHANA,** *Jones 1367* (PC) - syn. nov.
F. cremersii Biz. & Onraedt in Biz., Rev. Bryol. Lich. 42: 846, 1976 - Type: **MADAGASCAR**, *Cremers 2734* (PC) - syn. nov.
F. pictus Biz. ex Pócs, Fol. Hist. Nat. Mus. Matr. 4: 30, 1977; Bizot, Rev. Bryol. Lich. 40: 106, 1974 - Type: **TANZANIA**, *Pócs 6110* (holotype: EGR) - syn. nov.
F. subpictus Biz. ex Pócs, Fol. Hist. Nat. Mus. Matr. 4: 30, 1977; Bizot, Rev. Bryol. Lich. 40: 109, 1974 - Type: **TANZANIA**, *Pócs & Füleky 6220/C* (holotype: EGR) - syn. nov.

F. laxus is an extremely variable species. On the basis of the African material it can be characterized by: 1) large, smooth leaf cells, 2) elimbate leaves (perichaetial leaves and rarely other leaves) may be weakly limbate on the vaginant lamina, 3) unequal vaginant laminae that occupy usually less than half the leaf length, 4) leaf cells often with guttulae, 5) terminal antheridia and 6) leaf margins that may be bistratose in places. Two close expressions are found in Africa. One has green plants, rather thick cell walls, leaf margin often entire, leaf cells mostly with guttulae and the costae ending just below to far below the apex. The other form often has a reddish color, mostly thinner cell walls, denticulate, infrequently entire, leaf margins, leaf cells without or with inconspicuous guttulae and per- to excurrent costae. These two forms merge into each other.

Distribution. *F. laxus* occurs in the Neotropics, Asia, Australia and Africa. African distribution: West and West Central Tropical Africa, Tanzania, Madagascar, Réunion and the Seychelles. It grows on soil, rock, wood, termite's nests, etc. Altitudinal range: 0 - 2500 m.

KB: 119, *Pócs 6874, 6875*; 123, *Pócs 6771*; 130, *Pócs 7087*.

* ***F. purpureocaulis*** C. Muell., Gen. Musc. Fr.: 63, 1900.

This species can be recognized by: 1) limbidium restricted to vaginant laminae of perichaetial leaves, 2) leaves 1.1 - 1.5 mm long and 3 - 4 times as long as wide and 3) leaf cells distinctly multipapillose to almost smooth. The stem is often reddish.
Distribution: Cameroon, Zaire, Tanzania, Madagascar and Réunion. Lignicolous, saxicolous and terrestrial. Alt. 400 - 2900 m.

Ny: 103, *Pócs 6139, 6140, 6148*; 107, *Frahm 6299, Pócs 6321*; 108, *Frahm 6341, Pócs 6369, 6372*; 111, *Pócs 6411*. **KB**: 128, *Pócs 7775 pp*; 131 *Pócs 7114*; 133, *Pócs 7199*; 143, *Pócs 7784*; **Ka**: 152, *Pócs 7713, 7817, 7824, 7829, 7845*.

* ***F. sciophyllus*** Mitt., Trans. Linn. Soc. London 23: 55, 1860 - Type: interior of Africa, *Park* s.n. (BM).

C. gumangense C. Muell. Linnaea 39: 366, 1875 - Syntypes: **SUDAN-ZAIRE**, Niam-Niam, Gumanga. *Schweinfurth* s.n. (PC); Jabo, *Schweinfurth* s.n. (BM, PC)

Distribution: Ghana, Chad, Zaire, Zambia, Tanzania and Madagascar. On rock, soil or wood. Alt. 300 - 1700.

Ak: 170, *Pócs 8383 and 8388*.

* **F. borgenii** Hampe, Bot. Zeit. 28: 36, 1870 - Type: **SOUTH AFRICAN REPUBLIC**, Umpumulo, *Borgen* s.n. - (holotype: BM; isotype: PC).
F. sarcophyllus C. Muell. ex Dus., Kongl. Sv. Vet. Akad. Handl. 28: 11, 1895 - Type: **CAMEROON**, Musc. Afr. Cam. *Dusén* coll. *a-13*, (K, but IV 1892 instead of II 1891) - syn. nov.
F. borgenii var. *obtusifolius* Broth. ex Dixon, Trans. Roy. Soc. South Africa 8: 187. 1920 - Type: **SOUTH AFRICAN REPUBLIC**, *Wager 166* (BM) - syn. nov. *F. intralimbatulus* Broth. & Pot. Varde, Rev. Bryol. n.s. 1: 87, 1928 - Type: **GABON**, *Le Testu 5631* (PC) - syn. nov.
F. paucilimbatus Pot. Varde, Rev. Bryol. n.s. 1: 88, 1928 - Type: **GABON**, *Le Testu 5633* (PC) - syn. nov.
F. aoristoloma P. Varde, Rev. Bryol. Lich. n.s. 11: 17, 1939; Bizot e.a., Bull. Inst. Fond. Afr. Noire sér. A, 3-4: 46: 263, 1990 - Type: **CENTRAL AFRICAN REPUBLIC**, Mbaiki, *Tisserant* s.n. (PC) - syn. nov.
F. norkettii Pot. Varde, Rev. Bryol. Lich. 22: 7, 1953 - Type: **NIGERIA**, *Thorold 306* (PC) - syn. nov.

F. borgenii may be elimbate, but characteristically it has a short to long, often interrupted, intralaminal limbidium. The limbidia of perichaetial and subperichaetial leaves may be marginal. It has short, 0.6 - 1.1 mm long, leaves, densely multipapillose leaf cells, and evanescent, percurrent or excurrent costae, the species normally grows on wood. *F. argyroloma* Pot. Varde is very similar to this taxon and could be just a form of it with an unusually long and wide limbidium.

Distribution. Known from Chad, West, West Central, East and South Tropical Africa, Southern Africa and Madagascar. New to Zaire and Rwanda. Lignicolous, less often saxicolous or terricolous. Alt.: 150 - 1900 m.

ZAIRE, Irangi F.S.: 123, *Frey & Kürschner 6672 (91-75)*; 124, *Frey & Kürschner 6686 (91-89)*.

F. intramarginatus (Hampe) Mitt., J. linn. Soc. London, Bot. 12: 594, 1869.
F. pabstii Jaeg., Enum. Fissid. 23, 1869 - Type: **BRAZIL**, *Pabst* s.n. (NY)
C. sanguineonerve C. Mueller, Linnaea 39: 371, 1875; *F. sanguineonervis* (C. Muell.) Par., Ind. Bryol. 484, 1896 - Type: **SUDAN**, Dar Fertit, *Schweinfurth* s.n., 7 Febr. 1871 (PC-PV).
Conomitrium rubiginosum Hampe, Vid. Medd. Naturh. For. Kjoebenh. 3, 6: 176. 1875 - *F. rubiginosus* (Hampe) Par. Ind. Bryol,: 484, 1896 - Type: **BRAZIL**, *Glaziou 7299* (NY).
F. flavolimbatus Besch., Ann. Sci. Nat. 6, 9: 332, 1880 -Syntypes: **REUNION**, *Frappier* (PC); Plaine des Palmistes, *de l'Isle* s.n. (PC); grande Belous, *de l'Isle 415* (PC, but s.n.) - syn. nov.
F. bukobensis Broth. in Mildbr., Wiss. Ergebn. Deutsch. Zentral Afr. Exp. 1907-1908, 2: 143, 1910 - Syntypes: **TANZANIA**, *Mildbread 245* (PC), *214* (not seen) - syn. nov.
F. itarensis Broth. in Mildbr., Wiss. Ergebn. Deutsch. Zentral Afr. Exp. 1907-1908, 2: 143, 1910 - Syntypes: **TANZANIA**, *Mildbread 242* (not seen), *248* (PC) - syn. nov.
F. longelimbatus Broth., Hedwigia 52: 308, 1912 - Syntypes: **TANZANIA**, *Schröder 85, 88* (PC, but s.n.) - syn. nov.
F. ugandae Dix. & Pot. Varde in Pot. Varde, Ann. Crypt. Exot. 3: 45, 1930 - Type: **UGANDA**, Musandana, *Budd* s.n. (PC, BM) - syn. nov.
F. deslooveri Biz., Rev. Bryol. Lich. 42: 844, 1976 - Type: **RWANDA**, *De Sloover 18639* (holotype: PC) - syn. nov.
F. gibbonii Biz. ex Pócs, Fol. Hist. Nat. Mus. Matr. 4: 29, 1977; see also Bizot 1974, Rev. Bryol. Lich. 40: 131, 1974 - Type: **TANZANIA**, *Pócs & Gibbon 6052/CR* (isotype: PC) - syn. nov.
F. spinosolimbatus Biz. & Dury ex Pócs, Fol. Hist. Nat. Mus. Matr. 4: 30, 1977; see also Bizot

1974, Rev. Bryol. Lich. 40: 135; - Type: **TANZANIA**, *Pócs 6788/CV* (isotype: PC) - syn. nov.
F. subcongolensis Biz. & Dury ex Pócs, Fol. Hist. Nat. Mus. Matr. 4: 30, 1977; see also Bizot 1974, Rev. Bryol. Lich. 40: 136, 1974 - Type: **TANZANIA**, *Pócs 6006/H* (isotype: PC) - syn. nov.
F. ambiguus Biz. ex Pócs, Fol. Hist. Nat. Mus. Matr. 4: 29, 1977; see also Bizot 1974, Rev. Bryol. Lich. 40: 130, 1974 - Type: **TANZANIA**, *Pócs 6205/A* (isotype: PC) - syn. nov.

I have not seen the type specimen of *F. intramarginatus*. The African material is similar to the types of *F. pabstii* and *F. rubiginosus*. Both are *F. intramarginatus* fide Pursell, J. Hatt. Bot. Lab. 55: 238, 1984. *F. intramarginatus* is the only papillose species with an almost completely to completely limbate vaginant lamina occurring in the area. Frequently the limbidium continues into the lower part of the apical lamina and a few limbidium cells in the middle of the dorsal lamina of the upper leaves may be present. The limbidium is marginal. This species varies from uni- to pluripapillose; papillae with two tips occur frequently. *F. intramarginatus* might be confused with poorly limbate forms of *F. glauculus* from which it differs in the flat, not undulate leaves. Moreover, poorly limbate *F. glauculus* often grows intermixed with completely limbate plants.

Distribution: Neotropics, Réunion, Madagascar, Tanzania, Zaire, Rwanda, Uganda. The African species with multipapillose leaf cells and completely limbate vaginant laminae are not well understood. The distribution given here may therefore be but part of the actual range of this species. This species grows on soil and, less often on wood, termite's nests or rock. Altitudinal range 850 - 3200 m.

Ny: 108, *Pócs 6353 pp*; 111, *Pócs 6408*; 113, *Pócs 6474, Frahm 6494 pp*. - **KB**: 128, *Pócs 7356, 7362, 7384, 7387, 7403, 7772, 7775*; 130, *Pócs 7085*; 142, *Pócs 7400*; 143, *Pócs 7722*; 148, *Pócs 7879*. **Ka**: 152, *Pócs 7798 and 7821*. **Ak**: 170, *Pócs 8367 and 8374*.

F. glauculus C. Muell. ex Dus., K. Svensk Vet. Ak. Handl. 28: 12, 1895 - Type: **GUINEA**, Conakry, *Chevalier* s.n. (PC) - syn. nov.
F. muelleri Dusén , K. Svensk Vet. Ak. Handl. 28: 14, 1895, hom. illeg. - Type: **NIGERIA**, *Dusén 905* (PC) and *906* (PC), both as *Conomitrium occultifolium* - syn. nov.
F. dupuisii Ren. & Card., Bull. Soc. Roy. Bot. Belg. 35: 306, 1896 [1897]; *F. glauculus* subsp. *dupuisii* (Ren. & Card.) Pot. Varde, An. Crypt. Exot. 2: 283, 1929 - Type: **ZAIRE,** silva Bidi, *Dupuis* s.n. (PC, but *Dupuis 486*) - syn. nov.
F. tisserantii Broth. & Pot. Varde in Potier de la Varde 1925A: 793 - Syntype: **CENTRAL AFRICAN REPUBLIC**, sur termitières près de Boedou [Baedou], *Tisserant* (PC) et près d'Ippy (PC, *Tisserant 19*); terrains argileux, près Moronbas. *Tisserant* (not seen) - syn. nov.
F. rugifolius Dixon, J. Bot. 76: 220. 1938 - Type: **UGANDA**, *Thomas 1359* (BM) - syn. nov.

This species varies from limbate on all laminae to limbate on the vaginant laminae only (semilimbate). Limbate and semilimbate leaves are often found in the same collection. A few collections consist entirely of semilimbate plants, or of semilimbate forms mixed with a few plants with a short limbidium in the middle of the dorsal lamina. Since the two forms are not sharply separated they are here treated as one taxon. This taxon is characterized by 1) undulate, limbate or semilimbate leaves, 2) even in limbate forms the limbidia are lacking at the bases of dorsal laminae and the leaf tips and 3) the leaf cells have 2 - 4 papillae over the lumen. The vaginant laminae are often revolute.

Distribution: West and West Central Tropical Africa and Uganda. Frequently on termite nest's, also wood, soil or rock. At altitudes ranging from 500 -1500 m.

KB: 119, *Pócs 6874, 6875 pp*; 120, *Frey & Kürschner 6596 (91-46)*; 124, *Pócs 6780 pp*; 126, *Pócs 6825 pp, Frahm 6857*.

F. glaucissimus Welw. & Duby in Duby, Mem. Soc. Phys. Hist. Nat. Genève 21: 223, 1871.

This species is easily recognized by: 1) the limbate, rather stiff, long and narrow leaves, 2) the densely multipapillose laminal cells, 3) the limbate leaf tips and 4) the mostly wide limbidia (ca. 10 rows of cells) on the vaginant laminae.

Distribution. Known from West, West Central, East and South Tropical Africa. Mostly terrestrial, also on termite's nests, rock or wood. In shady places in forests, on stream banks, near springs etc. At altitudes from 0 - 1500 m.

KB: 123, *Pócs 6757, 6766 pp, 6767*; 126, *Pócs 6831 pp, 6844 pp*.

*** *F. bryum*** C. Muell. ex Dus., K. Svensk Vet. Ak. Handl. 28: 14, 1895.

Characterized by ecostate leaves with a limbidium and large, smooth leaf cells. Often there are gemmae on the leaves. Differs from other ecostate, limbate species in that the border cells have wide lumina.
NB. in the original description the leaves are incorrectly delineated as elimbate.

Distribution: Nigeria, Cameroon, Gabon and the Central African Republic. New to Rwanda and Zaire. On earth and rock. Between 200 - 2000 m. altitude.

Ny: 108, *Frahm 6330 pp*, 113, *Pócs 6473*. **KB**: 123, *Pócs 6766 pp*.

F. usambaricus Broth., Bot. Jahrb. 20: 182, 1895.

Characterized by ecostate, elimbate leaves and large, smooth leaf cells. Marginal cells often smaller, but not narrower than other laminal cells.

Distribution: South African Republic, Tanzania, Zaire, Central African Republic, Cameroon. On soil, termite's nests, rock and wood. Alt. 550 - 2400 m.

KB: 128, *Pócs 7356*. **Ny**: 113, *Frahm 6494* (both one stem mixed with other mosses).

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