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ABSTRACT

Fissidens ezukanmae Brugg.-Nann., sp. nov. belonging to *Fissidens* subgen. *Aloma* Kindb. is described and figured from material collected on termite mounds in Nigeria. This species closely resembles the pantropical *F. pellucidus* Hornsch. from which it differs in having mammillose cells as well as limbidia on the mid and upper leaves of perichaetial plants.

KEY WORDS
Bryophyta,
Musci,
West Africa,
new species.

RÉSUMÉ

Fissidens ezukanmae *Brugg.-Nann., sp. nov. (Fissidentaceae, Bryopsida) une nouvelle espèce des termitières du Nigéria.*

À partir de matériel récolté sur les termitières du Nigéria, *Fissidens ezukanmae* Brugg.-Nann., sp. nov. est décrit et illustré. L'espèce ressemble étroitement au pantropical *Fissidens pellucidus* Hornsch. dont il diffère par les cellules mamilleuses et les limbidia sur les feuilles médianes et supérieures des plantes périchaetiales.

MOTS CLÉS
Bryophyta,
Mousses,
Afrique de l'Ouest,
nouvelle espèce.

INTRODUCTION

A small, undescribed *Fissidens* Hedw. was found amongst a number of *Fissidens* collections from termite mounds in Taraba State, Nigeria, made by Dr Izuchukwu Ezukanma. At first sight it seemed to be *F. pellucidus* Hornsch. Like the new species, *F. pellucidus* has rather large, clear laminal cells with firm walls and leaves elimbate or with limbidia restricted to the upper leaves of perichaetial plants. Its laminal cells are smooth. They frequently contain one large guttula and then look deceivingly like mammillose cells. The new species has genuine mammillose cells and limbidia on both the upper as well the mid leaves of perichaetial stems. Moreover, it has axillary archegonia in addition to the usual terminal perichaetium. The type material has a subgenus *Aloma* Kindb. sporophyte, mammillose laminal cells, ± elimbate leaves as well as a bryoides type costa it belongs to *Fissidens* subgen. *Aloma*. This subgenus is gametophytically diverse and sporophytically uniform. It has scariosus-type peristomes (though peristomes in some species are reduced) and ± 32 columns of exothecial cells around the capsule periphery (Pursell & Bruggeman-Nannenga 2004).

SYSTEMATICS

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

DIAGNOSIS. — *Species haec* Fissidenti pellucido *similis sed cellulis mammillatis neque non foliis omnibus elimbatis vel limbidiis ad foliis superioribus plantarum perichaetialium limitatis facillime dignoscenda.*

TYPE. — **Nigeria**, Taraba State, Ngel Ngaki, towards the outskirts of Yelwa village, on the Mambilla Plateau, 7°05'07"N, 11°04'11"E, alt. 1600 m, on termite mound, XI 2015, *leg. I. Ezukanma 041* (holo-, L; iso-, KRAM; iso-, LUH).

ETYMOLOGY. — The new species is named in honour of its collector Dr Izuchukwu Ezukanma of Lagos, Nigeria.

DESCRIPTION

General description

Plants. Growing in mats.

Stems. 3-4 mm long, 0.7-1.2 mm wide with leaves (perichaetial stems 3′ 1 mm with 5 leaf pairs), unbranched or branched, often with proliferations from old perichaetia, pinnately foliated with 7-12 leaf pairs, without central strand.

Rhizoids. Brown, smooth.

Axillary nodules. Not differentiated; *leaves* distant, hardly crispate when dry, lanceolate, less often elliptical, acute, 0.5-0.9 × 0.1-0.2 mm, 3.0-5.5 times as long as wide, margin denticulate occasionally subentire, most leaves elimbate.

Limbidium. Restricted to the vaginant laminae of upper and mid leaves of perichaetial stems, extending up to ¾ the length of the vaginant laminae, reaching the insertion in perichaetial leaves? (hard to observe), not reaching the insertion in mid leaves, marginal, unistratose, insertion, up to 11 µm wide, consisting of wide cells.

Vaginant laminae. ± ⅗ the leaf length, narrower than the stem, unistratose, slightly to almost half open, completely open in some perichaetial leaves.

Dorsal lamina. Mostly ending well above the insertion, not decurrent.

Dorsal and apical lamina. Unistratose

Costa. Percurrent to excurrent, in cross-section bryoides-type.

Mid dorsal laminal cells. 6.0-11.0 × 4.0-7.0(-8.5) µm, 1-2 times as long as wide, mammillose.

Mid vaginant laminal cells. 6.0-12.5 × 3.5-7 µm, 1.5-3.0 times as long as wide, mammillose.

Gemmae. Not observed.

Fertile parts

Perigonia. Not seen.

Archegonia. In terminal perichaetia and also axillary, 200-250 µm long, solitary and naked in some leaf axils (Fig. 1C), at least some of which developing into mature sporophytes;

Perichaetial leaves. 1.5 mm long.

Calyptra. 0.6 mm long.

Sporophyte. Singly per perichaetium.

Setae. 4 mm long, smooth.

Capsule. Erect, 0.7 × 0.35 mm, ± 32 files of quadrate to oblong, thick-walled exothecial cells.

Peristome. Of scariosus-type, with curved, short teeth, 190 µm long, 40-41 µm wide at base.

Operculum. Not seen.

Spores. Subglobose 16-19 µm in diameter, coarsely papillose.

TAXONOMIC DISCUSSION

The new species is characterized by small, pinnately foliated stems, distant, lanceolate leaves, limbidia restricted to the upper and mid leaves of perichaetial stems and large, clear, mammillose laminal cells with firm walls. Remark-

FIG. 1. — *Fissidens ezukanmae* Brugg.-Nann., sp. nov. : **A**, stem with terminal perichaetium; **B**, branched vegetative stem; **C**, part of stem with axillary archegonia (upper one left anomalously developed); **D**-**G**, leaves; **H**, basal part of vaginant lamina of subperichaetial leaf with limbidium; **I**, leaf apex; **J**, mid leaf; **K**, insertion of leaf; **L**, detail mid-vaginant lamina; **M**, cross-section of stem; **N**, cross-section of leaf with bryoides-type of costa. All from holotype. Scale bars: A,B, 1 mm; C, 0,5 mm; D, 0,1 mm; E-G, 0,1 mm; H, 50 µm; I, 100 µm; J,K, 50 µm; L, M, 50 µm.

able is the presence of axillary, solitary archegonia (Fig. 1C). Such archegonia are rare in *Fissidens*. Other species in which they are found are for instance the European and North Amercian *F. gymnandrus* Buse (subgen. *Fissidens*), the unipapillose *F. inflatus* (Müll.Hal.) Paris (= *F. reflexus* sensu Bruggeman-Nannenga, 1997) and some expressions of the variable, pluripapillose *F. intramarginatus* (Hampe) A.Jaeger. The new species can be confused with the pantropical *F. pellucidus*. That species also has large, clear firm-walled laminal cells but differs by its laminal cells being plane and by limbidia that are restricted to the upper leaves of perichaetial plants or lacking. Laminal cells of *F. pellucidus* often contain a guttula. Guttulate cells are easily mistaken for mammillose cells. From the Neotropics a variety of *F. pellucidus* with prorate leaf cells has been described (Pursell 2007). The cells of the new species are not prorate, but have central mammillae.

The new species further resembles the variable pantropical *Fissidens serratus* Müll.Hal., which also has clear, mammillose cells. This species can be distinguished by its typically elimbate leaves and the characteristic, coarsely and irregularly serrate margins on the vaginant laminae of the perichaetial leaves. Moreover, it usually has frondose stems. A further Neotropical species that resembles *Fissidens ezukanmae* Brugg.-Nann., sp. nov. is *F. prionodes* Mont. It is distinguished by its narrower leaves, long excurrent costae and the conspicuous rusty brown color of older plants.

As *Fissidens ezukanmae* Brugg.-Nann., sp. nov. has a subgenus *Aloma* sporophyte (± 32 files of exothecial cells on the capsule periphery and a scariosus type peristome) it is classified in *Fissidens* subgen. *Aloma*. Gametophytically, it fits here well since it is the only non-aquatic subgenus of *Fissidens* in which the combination of (±) elimbate leaves, smooth or mammillose (unipapillose) laminal cells with a bryoides type costa is found.

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