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Fissidens biformis, an older name for *F. angustifolius* (Bryophyta, Fissidentaceae)

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Fissidens angustifolius is subsumed under *F. biformis* and *F. coorgensis* under *F. zollingeri*. It appeared that *F. biformis* sensu Gangulee et Eddy is *F. zollingeri*.

Taxonomic changes: *Fissidens biformis* Mitt. (= *F. angustifolius* Sull.), *F. zollingeri* Mont. (= *F. coorgensis* Broth.; = *F. biformis* sensu Gangulee (1971) et Eddy (1988)).

Fissidens angustifolius Sull. and *F. zollingeri* Mont. are well-known pantropical limbate species characterized by limbidia reaching the leaf apex and the insertion of the dorsal lamina, small, but distinct axillary nodules, large, inflated juxta-costal vaginant laminal cells, stems that are often frondiform, but can have pinnately arranged leaves and subgenus *Aloma* sporophytes i.e. with 32 columns of exothecial cells and a scarious type of peristome. They differ in the laminal cells, those of *F. angustifolius* are mammillose, those of *F. zollingeri* smooth.

References to *F. biformis* Mitt. are confusing. The species was described by Mitten and reduced to *F. zollingeri* Mont. by Fleischer (1901), but was retained as species next to *F. zollingeri* by Gangulee (1971) and Eddy (1988). Gangulee l.c. listed *F. coorgensis* Broth. as synonym of *F. biformis*. Iwatsuki and Suzuki (1982) did not include *F. biformis*, but in a note with *F. zollingeri* state that its type specimen has unipapillose cells. This note went probably unobserved by Eddy (1988) who described *F. biformis* as smooth-celled and listed *F. coorgensis* Broth. as synonym. The purpose of the present research was to establish whether *F. zollingeri*, *F. biformis* and *F. coorgensis* are conspecific. Iwatsuki & Suzuki's observation that the lami-

nal cells of the type of *F. biformis* are unipapillose (strictly speaking they are highly mammillose) was confirmed. Consequently this species is conspecific with *F. angustifolius* rather than with *F. zollingeri* which has smooth, plane laminal cells. The name *F. biformis* has priority. Examination of the type of *F. coorgensis* showed that it has smooth cells and is *F. zollingeri*.

According to the descriptions by Gangulee l.c. and Eddy l.c. *F. biformis* has smooth laminal cells. This suggests that *F. biformis* sensu these authors is *F. zollingeri*. This is supported by the fact that all synonyms cited by these authors, viz. *F. coorgensis* and *F. xiphioides* M. Fleisch. are *F. zollingeri*, too.

Fissidens biformis Mitt., J. Proc. Linn. Soc., Bot. 2: 141. 1859 - Type: SRI LANKA [Ceylon], ad Matale, *Gardner 626* (label: Ceylon, ad Matale, *Gardner 55* (626) (lectotype (Iwatsuki in sched.): NY 00 966583!; isotype: NY 00966584!)).

F. angustifolius Sull., Proc. Amer. Acad. Arts 5: 275. 1861 - Type: CUBA, wet places on the ground in dense woods; distributed as *Sullivant, Musci Cubensis 18* (holotype: FH (not seen), isotypes BM (not recently seen), NY (not recently seen). According to Pursell (2007) several packets contain only *F. zollingeri* Mont.; this appeared to be true for the L-specimen). – *syn. nov.*

Fissidens zollingeri Mont., Ann. Sci. Nat. Bot. 4: 114, 1845 - Type: INDONESIA, in terra turfosa insulae Javae, *Zollinger 1604* (holotype: PC-Mont; isotype: PC-Besch.). *Fissidens xiphioides* M. Fleisch., Hedwigia 38 (Beibl.): 125. 1899 – Type: INDONESIA, Java, auf lehmigem, festem

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Boden im Culturgarten bei Buitenzorg, *M. Fleischer* (lectotype (Iwatsuki & Suzuki, 1982): FH; isotypes distributed as *Fleischer, Musci-Archipelagi Indici ser I. 14 (1898)*; H-BR!) - synonymized by Iwatsuki & Suzuki (1982).

Fissidens coorgensis Broth., Rec. Bot. Surv. India 1 (12): 316. 1899 - Type: INDIA, Coorg, dry shady clay banks near Sidapur, II 1898, *Walker 267* (holotype: H-BR (H 1606047)!) - considered a synonym of *F. bififormis* by Gangulee (1971). – *syn. nov.*

Misapplied name: *F. bififormis* auct. non Mitt., sed Gangulee (1971) et Eddy (1988).

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