

Mosses from the Mascarenes - 4.

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Abstract. Thirty-seven species of mosses are reported from the Mascarenes and three are republished under new names. *Didymodon michiganensis* (Steere) K. Saito is new to Africa. *Campylopus bartramiaceus* (C. Muell.) Thér., *Pogonatum proliferum* (Griff.) Mitt. and *Zygodon intermedius* B.S.G. are new to the Mascarenes. *Calymperes palisotii* ssp. *palisotii* Schwaegr. is new to Mauritius.

Introduction

This is the fourth of a series of papers dealing with the mosses of the Mascarenes. I gave background information in the previous ones (Eén 1976, 1978, 1989), which is not repeated here, except for the list of localities for my own collection from 1962.

In order to facilitate my work I have designed and used personal databases for the family *Polytrichaceae* as well as the genera *Fissidens* and *Sphagnum*. Copies of all three databases are available from the IAB Software Library (Eén 1993A, B, C).

An asterisk (*) before the scientific name indicates that the species is new to a defined geographical area.

I have used the following numbering of the specimens that I have studied:

M000 = Specimens from Mauritius in my private herbarium.

R000 = Specimens from Réunion in my private herbarium.

RM000 = My private numbering of specimens in S.

List of localities

Mauritius

Loc. 5. Petrin Heath Nature Reserve, alt. 2200 feet.

Loc.10. Le Pouce, on rocks blasted for the old road from Port Louis to St. Pierre, alt. 1800 feet.

Loc.15. Mount Cocotte, Sphagnum fen, alt. 2300 feet.

Loc.16. Plaine Champagne, heath.

Réunion

Loc. 1. Cilaos, 100 m. above the village, alt. 1100 m.

Loc. 2. Cilaos, Réserve Biologique, alt. 1200 m.

Loc.18. Forest above St. Denis, zone de tamarin,

alt. 1400-1800 m.
 Loc.19. Forest above St. Denis, zone de branle, alt. 1700-1900 m.
 Loc.21. Forest above St. Denis, the lower part of zone de tamarin, alt. 1400-1600 m.
 Loc.22. Forest above St. Denis, zone de bois de couleurs, alt. below 1500 m.
 Loc.23. Plaine des Cafres, alt. 1800 m.
 Loc.24. La Grande Montée, upper part.
 Loc.25. La Grande Montée, upper part, alt. 1450 m.
 Loc.26. Bras des Calumets.
 Loc.27. West of Plaine des Palmistes, wet forest with tree ferns.
 Loc.29. East of the volcano, on a lavabed from 1932.
 Loc.30. Above St. Paul, alt. 2000 m., Forêt de Benard, alt. 1700-2100 m.

List of species

Aongstroemia filiformis (P. Beauv.) Wijk & Marg.

Réunion: Loc. 24 (R319, R544); 25 (R545); Vicinity of Caverne Soldat, 15 km. south of St. Denis, elevation 2.100 m., on rock, leg. Crosby #8850 1972-11-25, det. Crosby 1974 as *A. vulcanica* (S). - Republic of South Africa, Ost-Transvaal, in natürlichen Walde zwischen Bonnet-Junction und Wasserfälle bei Sabie, leg. Cholnoky 1955-04-04 #465, det. Magill 1978 (S, RM362).

The four plants from Réunion agree fairly well with the description in Magill (1981: 118, 120), and also with the pictures (Tab. 31: 1-9), which are drawn from the same Cholnoky collection #465. There are some differences however. Sections through the costa of the Mascarene plants in most cases show a single layer of thick-walled guide cells on the dorsal side. I have been able to confirm that they are absent in the plant from RSA. In all five plants, thus including the one from RSA, a section through the stem constantly shows an outer layer of similar cells, i.e. with thick walls but a rather large lumen.

Some stems in the four Réunion samples are as tall as 50 mm - max. 20 mm according to Magill

(1981: 118). In one specimen there are old twin sporophytes on rather short setae from the top of the stem, but overgrown by a side shoot.

Perhaps it is worth recalling that *A. vulcanica* (Brid.) C. Muell. was first described from Réunion by Bridel (1806: 125), but was later made a synonym of *A. filiformis*.

Atrichum androgynum (C. Muell.) Jaeg.

Réunion: Loc. 25 (R564); Plaine des Cafres, au col Bellevue, alt. 1600 m., leg. Onraedt 1971 (S). - Madagascar: Ankaratra, leg. Onraedt 1971-08-21 (S, RM027).

Breutelia stenodictyon (Ren. & Card.) Broth.

Réunion: Loc. 19 (R597); Piste forestière de la Plaine d'Affouches, entre p.k. 8 et 9, sur sol humide, inclinée, sous couvert de *Hedychium*, leg. Thérésien Cadet, 1964-01-29, CT68 (Herb. Een R591); Mafate, leg. Rodriguez 1889, det. Renauld (S).

See also my previous comment (Een 1976: 214) and those of De Sloover (1975: 269-270)

* *Calymperes palisotii* ssp. *palisotii* Schwaegr.

Mauritius: Loc. 10 (M199, M418 EGR), all det. Sándor Orbán, April 1990.

New to Mauritius. This species has many synonyms, but as far as I can find it has only been recorded from the island of Rodriguez in the Mascarenes by Mitten (1879: 388) under the name *C. laevifolium* Mitt.

* *Campylopus bartramiaceus* (C. Muell.) Thér.

Réunion: Loc. 19 (R595).

My plant fits well with the circumscription of the species in Frahm (1985: 35-36). New to the Mascarenes.

* *Didymodon michiganensis* (Steere) K. Saito

Réunion: Loc. 1, det. Sollman (R387 Herb. Een, Sollman).

This specimen has been identified by Dr Philip Sollman. The species has previously been found in Am.1, As.2 (see also Long 1993) and As.3 sensu Index Muscorum (Saito 1975: 517), and also more recently in Am.2 (Zander 1981: 405). The latter two publications have detailed descriptions and illustrations. In addition to this, Sollman (unpublished) has seen specimens from Afr.2 (Ethiopia) and As.4 (Philippines).

Not published before from Africa.

Fissidens

I first tried to identify my specimens on the basis of information received from Professor Bizot, but when Dr Gradstein saw my manuscript, he advised me to contact Dr Bruggeman-Nannenga. It was only then that I learned that Dr Bruggeman had worked already for several years on a revision of African *Fissidens*, including those of the Mascarenes.

Dr Bruggeman has kindly looked at some of my specimens and has advised me regarding the present state of valid names and synonyms. The following list is compiled with her aid and consent. She has suggested her publishing separately some specific explanations and clarifications.

Fissidens asplenioides Hedw.

Réunion: Loc. 1 (R181); Piste forestière de la Plaine d'Affouches, p.k. 8-9, alt. 1200 m, sur sol humide, tuf volcanique, sous les Hedychium, forme des tapis denses, Cadet CT75 1964-01-29 (Herb. Een R592).

* *Fissidens brevifrons* Mitt.

Réunion: Piste forestière de la Plaine d'Affrouche, p.k. 9, alt. 1200 m, sur roche en altération,

formant paroi vertical, humide, à l'ombre, leg. Cadet 1964-01-29, CT114. (Herb. Een R588).

Dr Bruggeman has seen this specimen and pointed out to me the difference between this species and the South African *F. fasciculatus* Hornsch. *F. brevifrons* is the valid name for a species that Bizot (1974) described as *F. cadetii*.

New to the Mascarenes under this name.

Fissidens ovatus Brid.

Réunion: Loc. 1 (R331); 2 (R443)

Dr Bruggeman-Nannenga kindly provided me with an unpublished key for separating the three species *F. corrugatulus* Dixon, *F. ovatus* Brid. and *F. crispulus* Brid.. I have determined my two specimens on the basis of the following characters: Axillary nodules present. Base of dorsal lamina clearly undulate. Section of costa usually with at least two rows of guide cells. Marginal cells in the lower part of ventral lamina with very thin walls.

Fissidens palmifolius (P. Beauv.) Broth.

Réunion: Avirons, Oratoire de Lourdes, alt. 400 m., en eaux courantes sur roches immergées, leg. Thérésien Cadet, CT27, 1963-08-03 (Herb. Een R593); Without further data, ex herb. Bescherelle (S, RM340).

Magill (1981) treated this species as a synonym to *F. fontanus* (Pyl.) Steud., but Pursell (1987: 644), in his monograph on the subgenus *Octodicerias* (Brid.) Broth., stated that *F. palmifolius* is a separate species but very close to *F. fontanus*.

F. palmifolius, as defined by Pursell, has a known distribution limited to Afr 2, 3 and 4, sensu Index Muscorum, (Pursell 1987: 652), and its synonyms include *F. debilis* Schwaegr., *F. capensis* (C. Muell.) Broth. and *Conomitrium borbonicum* C. Muell. (Pursell 1987: 653). This species was first reported from Réunion by Palisot de Beavoit (1805: 76) as *Mnium palmifolium*.

* *Fissidens papillosus* Lac.

Mauritius: Loc. 10 (M247).

This specimen was described by Bizot (1968: 473-474) as *F. eenii* sp. nov., but this name has recently been reduced to a synonym of *F. papillosus* by Dirkse, Bruggeman-Nannenga & Bouman (1991).

New to the Mascarenes under this name.

Hyophila potierii Besch.

Réunion: Avirons, Oratoire de Lourdes, alt. 400 m., surface cimentée, inclinée, exp. est, leg. Thérésien Cadet, 1963-08-03, CT23 (Herb. Een R594); Rivière du Mât, leg. Rodriguez, 1889, Musci Mascareno-Madagascarienses #60 (S).

Leptodontium stellatum Ren.

Réunion: Loc. 30 (R380).

This specimen is unusual in having plenty of propagules.

Leptodontium viticulosoides (P. Beauv.) Wijk & Marg.

Réunion: Loc. 1 (R370)

A rather small form with percurrent costa. In spite of the small size (key step 2) - "stems usually less than 20 mm long" - it comes out as this species when the monograph of De Sloover (1987) is used. A section through leaf and costa shows cell patterns that fits well with fig. 33-35.

Leucoloma crepinii Ren. & Card.

Réunion: Loc. 23 (R494)

Macromitrium fimbriatum (P. Beauv.) Schwaegr.

Réunion: Loc. 19 (R462); Leg. Rodriguez, ex herb. Renauld (S).

R462 has a few sporophytes, which are rather long and narrow and lack peristome. Müller (1849: 739) writes "peristomio nullo?".

Macromitrium mauritianum Schwaegr.

Réunion: Grand Brûlé, voisinage de la route N 1, alt. 120 m., sur tronc dans une clairière de la forêt, leg. Thérésien Cadet, CT39, 1964-01-05 (Herb. Een R517); Grand Brûlé, voisinage de la route N 1, alt. 100 m., sur écorce de Filaos (*Casaurina* sp.?), CT43 (Herb. Een R518).

I have found many earlier records of this species from Mauritius, but only one from Réunion (Renauld 1897: 146).

Neckeropsis lepineaana (Mont.) Fleisch.

Réunion: Avirons, Oratoire de Lourdes, alt. 400 m., surface rocheuse vertical exposée à l'est, 1963-08-03, leg. Thérésien Cadet, CT29 (Herb. Een R514). - Mauritius: Leg. N.J. Andersson 1853, ex herb. Aongstroem as var. *mauritiana* Aongstr. (S). - Madagascar: March 1931, det. Bizot as var. *comorae* (C. Muell.) Card. (S).

All four specimens are very similar, but the one from Madagascar has a completely flat leaf margin consisting of rhombic cells with somewhat protruding cell corners.

Octoblepharum albidum Hedw.

Réunion: Grand Brûlé, pres route nr 1, alt. 100 m., a la base d'un tronc de Agauria en sous bois assez humide, leg. Thérésien Cadet, CT47, 1964-01-05 (Herb. Een R590).

Philonotis gracilescens Schimp. ex Wright

Réunion: Loc. 29 (R548). - Mauritius: Leg.

Ayres, typus det. Schimper (S).

I have had an interesting correspondence with Dr P. Tixier about this name. The following is a quotation from my letter of 1992-07-27:

“The name *Philonotis gracilescens* is really very intriguing. As it has some ramifications in Scandinavian literature, I have done some research in my private library. I find that there are probably three different taxa involved, i.e.:

A 1890 - *Philonotis fontana* var. *gracilescens* Schimp. ex Husnot. This is probably the same as: 1897 - *Philonotis fontana* var. *gracilescens* Schimp. ex Kindb. This taxon should probably be called *P. fontana* var. *pumila* (Turn.) Brid. It grows in mountains in Europe.

B 1892 - *Philonotis gracilescens* Schimp. ex Wright. This taxon may be distinct from A and has been reported from the Mascarenes.

C 1899 - *Bartramia afro-uncinata* var. *gracilescens* C. Muell. According to Magill (1987: 425), this is *Philonotis dregeana* (C. Muell.) Jaeg., which has been found in the Republic of South Africa and in Zimbabwe. The specimen you retrieved from the Cosson herbarium seems to be a part of the type collection.”

Polytrichaceae

My work with this family has been greatly facilitated by the work by De Sloover (1986).

Pogonatum

When I had already examined all my specimens belonging to this genus, Hyvönen (1989) published his synopsis. I adapted Hyvönen's concept of species, which did change my identifications to a certain degree. One difference between Hyvönen (1989) and De Sloover (1986) is that the first author separates *P. gracifolium* Besch. from *P. usambaricum* (Broth.) Par. Hyvönen (1991) writes

in a private communication that: “The study of the type specimens revealed that *P. usambaricum* is a good species and differs from *P. gracifolium* - - Unlike De Sloover (1986: 296) I found that the types differ from each other.”

Pogonatum belangeri (C. Muell.) Jaeg.

Réunion: Loc. 22 (R570); 23 (R569, R571A, R571B).

Pogonatum usambaricum (Broth.) Par.

Réunion: Loc. 25 (R565); 27 (R582).

Pogonatum convolutum (Hedw.) P. Beauv.

Réunion: Loc. 22 (R580); 23 (R571A); 24 (R581); Tévelave, leg. T. Cadet 20 July 1963, CT10 (Herb. Een R584). - Madagascar: Moramanga, leg. Decary 1930, det. Thériot as *P. convolutum* var. *madagassum* (S, RM024); Fort Dauphin, en forêt, leg. Decary 1932, det. Thériot as f. *robusta* (S, RM021).

* *Pogonatum proliferum* (Griff.) Mitt.

Réunion: Loc. 30 (R567).

When I first examined this plant superficially, I was sure that I had an *Atrichum*. This led me to trying first *Pogonatum atrichoides* Fleisch. from Asia and then *P. ugandae* P. Varde from Africa. I finally settled for the latter species. I was therefore pleased to find that Hyvönen (1989: 37) had lumped the two species under the name *P. proliferum*.

The species is new to the Mascarenes, and the distribution gap between India and the East African mainland has been filled.

Polytrichum commune L. ex Hedw.

Mauritius: Loc. 16 (M501); s.l., leg. Ångström as *P. remotifolium* (S, RM014) - Réunion: Loc.

1 (R572, R573); 2 (R359, R360, R361, R574, Réunion: Piste forestière de la Plaine d’Affouches, p.k. 9, alt. 1200 m., c.sp., leg. Thérésien Cadet, 1964-01-29, CT90, (Herb. Een R589).

For the difference between this species and *P. mauritianum* (Besch.) Manuel, see Een (1976: 216).

Schlotheimia robillardei Duby

Réunion: Piste forestière de la Plaine d’Affouches, entre p.K. 9 et 10, alt. 1200 m., sur tronc de *Philippia montana* à 1 m. environ du sol, lieu découvert au bord du sentier, leg. Thérésien Cadet, CT86, 1964-01-29 (Herb. Een R519).

See comments in Een (1978: 222).

Sphagnum

When determining my specimens I have mainly followed Eddy (1985).

Sphagnum bourbonense Crum

Réunion: Loc. 19 (R596).

My plant fits very well the original description by Crum (1992).

I find in my records that the name has been published before by P. Beauv. ex Steuder. It was erroneously used as a synonym of *S. cymbifolium* var. *bourbonense* P. Beauv.

Sphagnum perichaetiale Hampe

Mauritius: Loc. 5 (M502); 15 (M503, M504, M505, M506).

Sphagnum truncatum var. *bordasii* (Besch.) Eddy

Réunion: Loc. 19 (R398, R597, R598). - Madagascar: Baie d’Antongil, Maroantsetra, zone inférieure des forêts, leg. Mathieu 1901 as *S.*

mathieui (S, RM037).

Sphagnum violascens C. Muell.

Réunion: Loc. 22 (R599); Leg. Rodriguez 1889, Musci Mascareno-Madagascarienses #50 as *S. obtusiusculum*, det. Renault ? (S, RM039); Leg. Rodriguez, loc. class. as *S. obtusiusculum* var. *rodriguezii*, det. Cardot ? (S, RM040).

Syrrhopodon rodriguezii Ren. & Card.

Réunion: Grand Brûlé, route nationale 1, lieu dit “Vierge au Parasol”, alt. 90 m., sur tronc de *Agauris salicifolia*, leg. Thérésien Cadet 1964-01-05, CT41, det. Sándor Orbán 1990-04 (Herb. Een R558, EGR).

Tayloria orthodonta (P. Beauv.) Demaret

Réunion: Loc. 27 (R583).

For determination of this plant I have followed Koponen & Weber (1972)

* *Zygodon intermedius* B.S.G.

Réunion: Loc. 21 (R199).

R199 was determined as *Z. reinwardtii* (Hornsch.) Braun by Bizot (1968: 480), but the leaves are small (0.13 by 0.42 mm) and the cells in the upper part are 8 my in diameter. I have seen no leaf denticulations. The cells of the reddish stem gemmae are not divided by longitudinal walls. I have used Malta (1926) for this identification.

New to the Mascarenes, filling a gap in the known distribution, which was “As 3, 4. Afr 2. Am4, 6. Austr 1, 2.” according to Wijk, Margadant & Florschütz (1969: 232).

Trichostomum tenuirostre (Hooker & Taylor) Lindb.

Réunion: Loc. 23 (R393).

Corrigenda

Blindia magellanica Schimp. ex C. Muell.

Réunion: Loc. 1 (R520).

In a previous publication (Een 1989: 56) I reported *B. acuta* (Hedw.) B.S.G. from Réunion. In a personal letter (1990-04-09) Dr Ryszard Ochyra suggested that my specimen rather is *B. magellanica*, as this is the case with De Sloover specimens from the same island. See also Bartlett & Vitt (1986: 218-223). I sent my specimen to Dr Ochyra, who could confirm his suspicion.

Not published before from the Mascarenes.

Trichostomum brachydontium Bruch

Mauritius: Loc. 10 (M415, M416); Vaughan M/113 (Herb. Een M473).

The appearance of the “Flora of Southern Africa” (Magill 1981: 260-262) has made me reconsider the identification of these three specimens. All of them have been reported by me before as *T. ayresianum* Schimp. ex Besch. (Een 1976: 217, 1978: 222). I now find it very difficult to keep the two species apart. The plants from Mauritius tend to have more obtuse leaves than European specimens in my herbarium, but according to Dixon (1954: 239) “leaf-apex of every shade of obtuseness are found”. The single sample of *T. ayresianum* in S is very scanty, and I had to refrain from a closer analysis.

Brotherus (1924: 261) stated in his keys that both species have “leaf base yellowish, with very thick-walled rectangular cells” (my translation of key Bbß), but none of my specimens have these characters.

Renauld (1898: 125) reported this species from Réunion under the name *T. mutabile* Bruch.

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Philip Sollman of Zevenaar, the Netherlands for identifying *Didymodon michiganensis* and for an offer to identify an accumulated rest of specimens, which probably belong to *Pottiales*.

Finally thanks also to Thor-Björn Engelman, curator of the Bryophyte Herbarium of S. I have for the last nine months had the good fortune to have a personal work-place at the herbarium, and thus also many opportunities to discuss various bryological questions with him, as well as with Lars Hedenäs. Both of them also scrutinized my original computerscript.

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