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John C. BRINDA, Si HE, John J. ATWOOD
Robert E. MAGILL & Catherine REEB

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Notes on the bryophytes of Madagascar 5: new records from old collections

John C. BRINDA

Si HE

John J. ATWOOD

Robert E. MAGILL

Missouri Botanical Garden, 4344 Shaw Blvd., St. Louis MO 63110 (United States)
john.brinda@mobot.org (corresponding author)

Catherine REEB

Institut de Systématique Evolution Biodiversité, Sorbonne Université, Muséum National
d'Histoire Naturelle, CNRS, EPHE, 57 rue Cuvier 75005 Paris (France)

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ABSTRACT

Investigations into the bryophyte flora of Madagascar as part of the MadBryo project, show that five moss genera (*Actinodontium* Schwägr., *Aulacopilum* Wilson, *Forsstroemia* Lindb., *Haplohymenium* Dozy & Molk., and *Herzogiella* Broth.) are new for the island. For three additional taxa we clarify the correct name to use for Malagasy specimens. *Ectropothecium perrieri* Thér. is placed in synonymy with *Herzogiella cylindricarpa* (Cardot) Z.Iwats. and *Lepidopilum diversifolium* Renaud & Cardot is reduced to a synonym of *Thamniopsis utacamundiana* (Mont.) W.R.Buck. These particular cases highlight the hidden diversity lurking within underutilized natural history collections. They should also serve as a reminder that older collections need to be critically reexamined as our taxonomic concepts evolve.

KEY WORDS

Madagascar,
Erpodiaceae,
Daltoniaceae,
Leucodontaceae,
Hypnaceae,
new synonymys.

RÉSUMÉ

Notes sur les bryophytes de Madagascar 5 : nouvelles citations issues de collections anciennes.

L'étude de la flore des bryophytes de Madagascar, dans le cadre du projet MadBryo, a mis en évidence la présence de cinq nouveaux genres de mousses sur l'île (*Actinodontium* Schwägr., *Aulacopilum* Wilson, *Forsstroemia* Lindb., *Haplohymenium* Dozy & Molk. et *Herzogiella* Broth.). Nous avons également clarifié la nomenclature de trois autres taxons pour les spécimens malgaches. Enfin, *Ectropothecium perrieri* Thér., est placé en synonymie avec *Herzogiella cylindricarpa* (Cardot) Z.Iwats. et *Lepidopilum diversifolium* Renaud & Cardot avec *Thamniopsis utacamundiana* (Mont.) W.R.Buck. Ces apports reflètent la diversité cachée au sein de collections naturalistes sous-exploitées. Alors que nos concepts taxonomiques évoluent, cela souligne la nécessité d'un réexamen critique de ces collection anciennes.

MOTS CLÉS
Madagascar,
Erpodiaceae,
Daltoniaceae,
Leucodontaceae,
Hypnaceae,
synonymes nouveaux.

INTRODUCTION

MadBryo (<https://www.madbryo.org/>) is a collaborative project recently organized to support bryologists interested in studying the unique bryophyte diversity of Madagascar. Its aim is to close the gaps in our current knowledge by gathering together the specimen and taxonomic data that are scattered across multiple institutions and supplementing them as necessary with targeted collecting efforts. We hope that the results will provide a strong foundation for further scientific research on Malagasy bryophytes and for promoting their conservation. One of the tools that supports this research is the Catalogue of the Plants of Madagascar (MadCat; <http://www.tropicos.org/projectwebportal.aspx?pagename=Bryophytes&projectid=17>) which has recently been updated to include bryophytes and offers the ability for researchers to collaborate remotely. As new bryophyte species are discovered and described from Madagascar, MadCat will be continually updated to reflect this.

The latest published checklist of bryophytes from Madagascar, a globally recognized biodiversity hotspot, lists 1144 taxa for the island (Marline *et al.* 2012). However, we suspect that this number considerably underestimates the actual size of the island's bryoflora. For example, after a single short workshop we were able to report seven taxa as new for the island (Reeb *et al.* 2019). Here we report five genera as new for the Malagasy flora and clarify the status of three other taxa that have been previously reported. All of these reports are based on collections that were made decades ago and have only recently come under further scrutiny as part of the MadBryo project. In fact, most of the specimens discussed here came to our attention only because organizing and databasing the Malagasy bryophyte collections at MO is a priority for this project. The results being presented here are a somewhat random assortment of neglected specimens that caught our eye for one reason or another. Some had interesting determinations that warranted further investigation while others were part of the undetermined backlog that is now organized to family/genus. We hope that this will illustrate the importance of older natural history collections and the hidden diversity that they contain. For places like Madagascar, where the bryoflora is poorly known, re-examination of these specimens by experts in light of more recent taxonomic advances can often yield important insights. We expect to report further additions as we continue to learn more about the Malagasy bryophyte flora.

GENERA NEW TO MADAGASCAR

Family DALTONIACEAE Schimp.
Genus *Actinodontium* Schwägr.

Actinodontium ascendens Schwägr.

SPECIMEN EXAMINED. — **Madagascar.** Toamasina: Valley of Marimbona R., W of Soanierano, Antasibe; 350 m; 16°53'59"S, 49°34'59"E; 13.XII.1938; Lam & Meeuse 5948C (L[L0836988]!, MO[MO-6234681]!).

NOTES

The genus *Actinodontium* Schwägr. is newly reported for Madagascar based on a specimen in L with a duplicate in MO that was originally annotated as "*Lepidopilum* sp. nov.". *Actinodontium* is similar to some *Lepidopilum* (Brid.) Brid. species, particularly those in the *L. longifolium* group (Churchill 1988), in having erect, evenly foliate stems; symmetric, elimbate leaves with prominent double costae; and a daltoniaceous-type peristome consisting of pale, narrowly triangular exostome teeth that are papillose on both surfaces and lack median furrows, as well as papillose endostome segments above a low or high basal membrane. The genera differ in that *Actinodontium* has mostly smooth setae and glabrous calyptrae, compared to the more consistently papillose to spinose setae and pilose calyptrae of *Lepidopilum*. There are presently five accepted species in *Actinodontium*: the southeastern Asian and Oceanic *A. ascendens* and *A. rhabdostegum* (Müll.Hal) Bosch & Sande Lac., the West African *A. streptopogoneum* Broth., and the Caribbean and Central American *A. pygmaeum* W.R.Buck and *A. sprucei* (Mitt.) A.Jaeger (Mohamed & Robinson 1991; Müller & Pócs 2007; Allen 2010). *Actinodontium ascendens* and *A. rhabdostegum* were regarded by Tan & Robinson (1990) as potentially identical, while Allen (2010) noted strong affinities between *A. ascendens*, *A. rhabdostegum* and *A. sprucei*. A mixture of features from these three species are observed in the Madagascar specimen, lending additional support that they may be conspecific. The Madagascar specimen, like *A. ascendens*, *A. rhabdostegum* and *A. sprucei*, has sparsely branched, 1.2-1.5 cm tall plants that are densely-leaved and with a golden color. Furthermore, the size of the lateral leaves, 2.4-3.0 × 0.7-0.9 mm, and the oblong-lanceolate shape, overlaps with that of all three species, although the leaf dimensions are somewhat shorter and narrower than typical *A. rhabdostegum* specimens. Also, the variable lateral leaf apices of the Madagascar specimen tend to be gradually acute to short-acuminate and are more consistently similar to *A. ascendens* and *A. sprucei* rather than *A. rhabdostegum*, which often has longer apices, but sometimes can have short-acuminate apices as well. Additionally, the leaf margins of the Madagascar specimen are narrowly revolute and mostly entire or slightly serrulate near the apices, features shared by all three *Actinodontium* species, along with their hexagonal to elongate-rhomboidal leaf cells and double costae that extend approximately $\frac{1}{2}$ - $\frac{2}{3}$ rd the leaf length, and do not protrude. While the erect, cylindrical capsules, 2.3-2.8 mm long (including the operculum), of the Madagascar specimen overlap in size with all three *Actinodontium* species, this range is at or slightly exceeds the upper range for capsule length in typical *A. ascendens* specimens. The Madagascar specimen lastly has clusters of uniseriate, 5-7-celled gemmae in the leaf axils, identical to those described for *A. sprucei*. While gemmae have not apparently been described previously for *A. ascendens* and *A. rhabdostegum*, similar gemmae were found in a specimen of *A. rhabdostegum* from Fiji (Hegewald & Hegewald 11785, MO). The name *A. ascendens* is assigned to the Malagasy specimen given the strong phylogeographic affinities between the Madagascar and southeast Asian floras.

Actinodontium ascendens also has priority as the oldest name among the three species, if *A. rhabdostegum* and *A. sprucei* should indeed later prove to be conspecific with it.

Family ERPODIACEAE Broth.
Genus *Aulacopilum* Wilson

Aulacopilum glaucum subsp. *trichophyllum*
(Ångstr.) Pursell

SPECIMENS EXAMINED. — **Madagascar.** Fianarantsoa: Patch of dry forest below large rock dome W of road between Ambalavao and Mankany, 14 km S of Ambalavao; 1050 m; 21°56'33"S, 46°56'09"E; 20.IX.1994; *Magill & Pócs 12927A* (MO[MO-6897760]!) & *12945* (MO[MO-6897759]!).

NOTES

Pursell (2017) reports this species from the nearby African countries of Kenya, Malawi, and South Africa. Both the type subspecies as well as subsp. *trichophyllum* have been reported from Africa. The plants reported here have hyaline tips at the apices of many leaves and simple annuli that are at least sometimes two cells wide. In our plants the terminal cells of the hyaline apices vary considerably in the degree of papillosity. They are usually noticeably smoother than the adjacent cells but less commonly completely smooth. These specimens do not appear to represent the extreme form of subspecies *trichophyllum* but still seem best placed there. Our uncertainty perhaps lends support to Pursell's (2017) treatment of this taxon at the subspecific level. With the addition of the genus *Aulacopilum* to the flora, there are now four species of Erpodiaceae reported from the island. Pursell (2017) transferred all the Malagasy species from *Erpodium* to other genera in his revision of the family. If this classification is accepted, then the Malagasy species represent three different genera: *Aulacopilum glaucum* Wilson, *Tricherpodium beccarii* (Müll.Hal.) Pursell, *Venturiella glaziovii* (Hampe) Pursell, and *V. madagassa* (Paris & Renaud) Pursell.

Family LEUCODONTACEAE Schimp.
Genus *Forsstroemia* Lindb.

Forsstroemia producta (Hornsch.) Paris

SPECIMEN EXAMINED. — **Madagascar.** Fianarantsoa: Andringitra, Ramiova Forest E of village of Antanafotsy, 30 km S of Ambalavao; 22°06'S, 46°53'E; 3.XI.1972; *Crosby & Crosby 7358* (MO[MO-2191530]!, TAN).

NOTES

Forsstroemia producta is widespread in southeast Africa and Stark (1987) reported it from Ethiopia, Kenya, Malawi, Rwanda, South Africa, Tanzania, and Uganda. In addition, Müller (1995) reported it from the Democratic Republic of the Congo. Its presence in Madagascar is not surprising

considering that it also occurs in North and South America, Australia, and Asia. The single Malagasy specimen we have seen was previously determined as *Cryphaea* F. Weber and then *Braunia* Bruch & Schimp. Both genera are perhaps superficially similar but the collection in question possesses sporophytes, the form of which clearly rule out either of those possibilities.

Family ANOMODONTACEAE Kindb.
Genus *Haplohymenium* Dozy & Molk.

Haplohymenium triste (Ces.) Kindb.

SPECIMEN EXAMINED. — **Madagascar.** Toliara: Fort Dauphin (Tôlañaro) region; NE of city, in region called Mandena, beyond Botanical Garden and QIT camp, in forest remnants near coastal lake; 25 m; 24°57'S, 47°00'E; 31.X.1989; *McPherson & Dumetz 14342A* (MO[MO-3965910]!).

NOTES

This is another widespread taxon that in Africa has been reported from Réunion (Müller 2002; Arts 2005) and doubtfully from Kenya (O'Shea 2000). Recently, it has also been confirmed for South Africa (Hedderson 2020). Its distribution includes temperate parts of the northern hemisphere and its morphology and separation from closely related taxa is well-treated by Watanabe (1972). *Haplohymenium pseudotriste* (Müll.Hal.) Broth. is similar and both species occur on Réunion (illustrated in Arts 2005). However, after consulting examples of both species, the single Malagasy specimen seems best placed in *H. triste*, adding yet another new genus for Madagascar.

Family HYPNACEAE Schimp.
Genus *Herzogiella* Broth.

Herzogiella cylindricarpa (Cardot) Z.Iwats.
(Fig. 1)

NOTES

Examination of the type of *Ectropothecium perrieri* Thér. from Madagascar revealed that it possessed a number of features inconsistent with its placement in *Ectropothecium*. In particular, the long-cylindrical capsules (up to 2.5 mm long), absence of pseudoparaphyllia on stems, and long-rectangular, evenly thick-walled exothecial cells found in *E. perrieri* do not fit the concept of that genus. In contrast, *Ectropothecium* is characterized by pendulous, tiny, ovoid capsules (usually less than 1.2 mm long), complex pseudoparaphyllia (mixture of filamentous or subfilamentous and foliose or subfoliose ones) on stems, and collenchymatous exothecial cells (Iwatsuki 1992; He 2019).

Thériot (1922) tentatively placed his new species in *Ectropothecium*, noting that it was similar to *Stereodon* (Brid.) Brid. as suggested by H. N. Dixon and *Mittenothamnium* Henn. according to V. F. Brotherus. All of these bryologists considered it to

be possibly a new genus. However, the long-cylindrical capsules in combination with several characters, such as the absence of pseudoparaphyllia, ovate-lanceolate leaves with double costae, slightly decurrent leaf bases in the form of moderately inflated alar cells, and margins distinctly serrate to serrulate almost throughout, match well with *Herzogiella cylindricarpa* (Cardot) Z.Iwats. Therefore, *Ectropothecium perrieri* is here treated as a new synonym of *H. cylindricarpa* and represents a new record of the genus and species for Madagascar.

Herzogiella cylindrocarpa (Cardot) Z.Iwats.

Journal of Hattori Botany Laboratory 33: 374 (1970). — *Ctenidiadelphus cylindricarpus* (Cardot) E.B.Bartram, *Bryologist* 49: 124 (1946). — *Isopterygium cylindricarpum* Cardot, *Revue Bryologique* 37: 56 (1910). — Type: Mexico. Morelos: Cuernavaca, *Pringle 10606* (lectotype fide Ireland & Buck [2009] and annotation in herb., MO[MO-1995248]!).

Ectropothecium perrieri Thér., *syn. nov.*, *Recueil des Publications de la Société Havraise d'Études Diverses* 89 (2): 131 (1922). — Type: Madagascar. Massif Andringitra: c. 1600-2500 m, 1921, *Perrier de la Bathie s.n.* (syn-, FH!, G!, JE!, MO!, NY!, PC). The type material from the author's herbarium in PC has not been examined by us, so we refrain from designating a lectotype at this time.

Herzogiella boliviana (Broth.) M.Fleisch. ex Broth., *Die Natürlichen Pflanzenfamilien* (ed. 2), 11: 466 (1925). — *Plagiothecium bolivianum* Broth. in Herzog, *Bibliotheca Botanica* 87: 153 (1916). — Lectotype: Bolivia. Waldgrenze über Tablas, *Herzog 2821* (see Ireland & Buck 2009).

SELECTED SPECIMENS EXAMINED. — **Bolivia.** La Paz: c. 3200-3400 m, 16°57'S, 67°17'W, *Lewis 87570* (MO[MO-3371138]!).
Colombia. Cundinamarca: c. 3500 m, 5°00'S, 74°00'W, *Ireland 23374* (MO[MO-3663227]!).
Costa Rica. Heredia: c. 2600 m, 10°05'N, 83°55'W, *Crosby 9866* (MO[MO-2858640]!).
Ecuador. Pichincha: c. 3600 m, 00°05'N, 78°01'W, Øllgaard *et al.* 34341 (MO[MO-4419567]!).
Guatemala. Quetzaltenango: c. 8600 ft., *Sharp 2106* (MO[MO-2071384]!).
Honduras. Lempira: c. 2700-2730 m, 14°32'N, 88°41'W, *Allen 12126* (MO[MO-4453886]!).
Madagascar. Fianarantsoa, Andringitra: c. 1700-2000 m, 22°10'S, 46°53'E, *Crosby & Crosby 7068* (MO[MO-6768800]!).

NOTES

Herzogiella cylindricarpa was first reported from Africa by Buck (1993), based on two collections from Rwanda, and later from Tanzania by Pedersen & Hedenäs (2001). The species has a somewhat wider distribution range in the western Hemisphere from Mexico through Central America, to Western and Northern South America (Allen 2018). This species often grows on the base of tree trunks or on rotting logs at rather high elevations from 1600-3600 m. Throughout its range this species exhibits a certain degree of variation with respect to leaf arrangements, leaf shape, and the length of capsules, varying from widely spaced, distinctly complanate-foliate stems to somewhat subjulaceous leafy stems, from ovate-lanceolate to lanceolate leaf shape, and from long-cylindrical to short-cylindrical capsules.

NOTES ON OTHER SPECIES

Family HEDWIGIACEAE Schimp.
 Genus *Braunia* Bruch & Schimp.

Braunia imberbis (Sm.) N.Dalton & D.G.Long

SPECIMENS EXAMINED. — **Madagascar.** Antananarivo: Ankaratra; 2300 m; *Bosser 8208* (MO[MO-2130759]!, TAN); VIII.1955. Station forestière de Manjakatempo (Est d'Ambatolampy); 2600 m; *Cremers 1705[A]* (MO[MO-2112954]!, PC[PC0788286], TAN); 22.VIII.1971. Ankaratra; Ouest d'Ambatolampy; 2500 m; *Cremers 1957* (MO[MO-2858803]!, PC[PC0788287], TAN), 27.III.1972.

NOTES

These plants were reported by Marline *et al.* (2012) as *Braunia secunda* (Hook.) Bruch & Schimp. — the name they were originally distributed under (det. M. Onraedt). However, we recently redetermined the specimens as *Braunia imberbis* while examining the duplicates housed at MO. Two of the MO specimens were in fact already annotated by M. Crosby in 1974 as *Hedwigidium integrifolium* (P.Beauv.) Dixon, a name that has until recently been misapplied to this species (see Dalton *et al.* 2012). As pointed out by De Luna (2016) and others previously (cited therein), when confronted with non-reproductive material the separation of *Braunia imberbis* from *Braunia secunda* is rather difficult. The Malagasy specimens do not possess capsules; however, we found the region of strongly porose and elongate basal leaf cells to be consistently larger and more conspicuous in *Braunia imberbis*. This was easier to discern when the material was wetted with a 2% KOH solution, which usually stains this area bright red. Based on these findings *Braunia secunda* is excluded from the Malagasy flora and replaced by *Braunia imberbis*.

Family GRIMMIACEAE Arn.
 Genus *Bucklandiella* Roiv.

Bucklandiella subsecunda (Hook. & Grev. ex Harv.)
 Bedn.-Ochyra & Ochyra

SPECIMENS EXAMINED. — **Madagascar.** Fianarantsoa: Above Antanitosy, along trail to Pic Boby; 2010 m; 22°08'45"S, 46°53'56"E; *Magill & Pócs 13119* (MO[MO-6897758]!); 23.IX.1994.

NOTES

Thériot (1925) reported the genus *Racomitrium* Brid. as new for Madagascar based on collections by H. Perrier de la Bathie from Mont Tsaratanana. Thériot reported these plants as "*Racomitrium Lepervanchei* Besch. forma." and they have subsequently been reported as *Racomitrium crispulum* var. *tasmanicum* (Hampe) E.Lawton (Crosby *et al.* 1983) following the synonymy proposed by Lawton (1973). At the species rank (still following Lawton's synonymy) the correct name for this taxon would be *Bucklandiella membranacea* (Mitt.) Bedn.-Ochyra & Ochyra and this was the

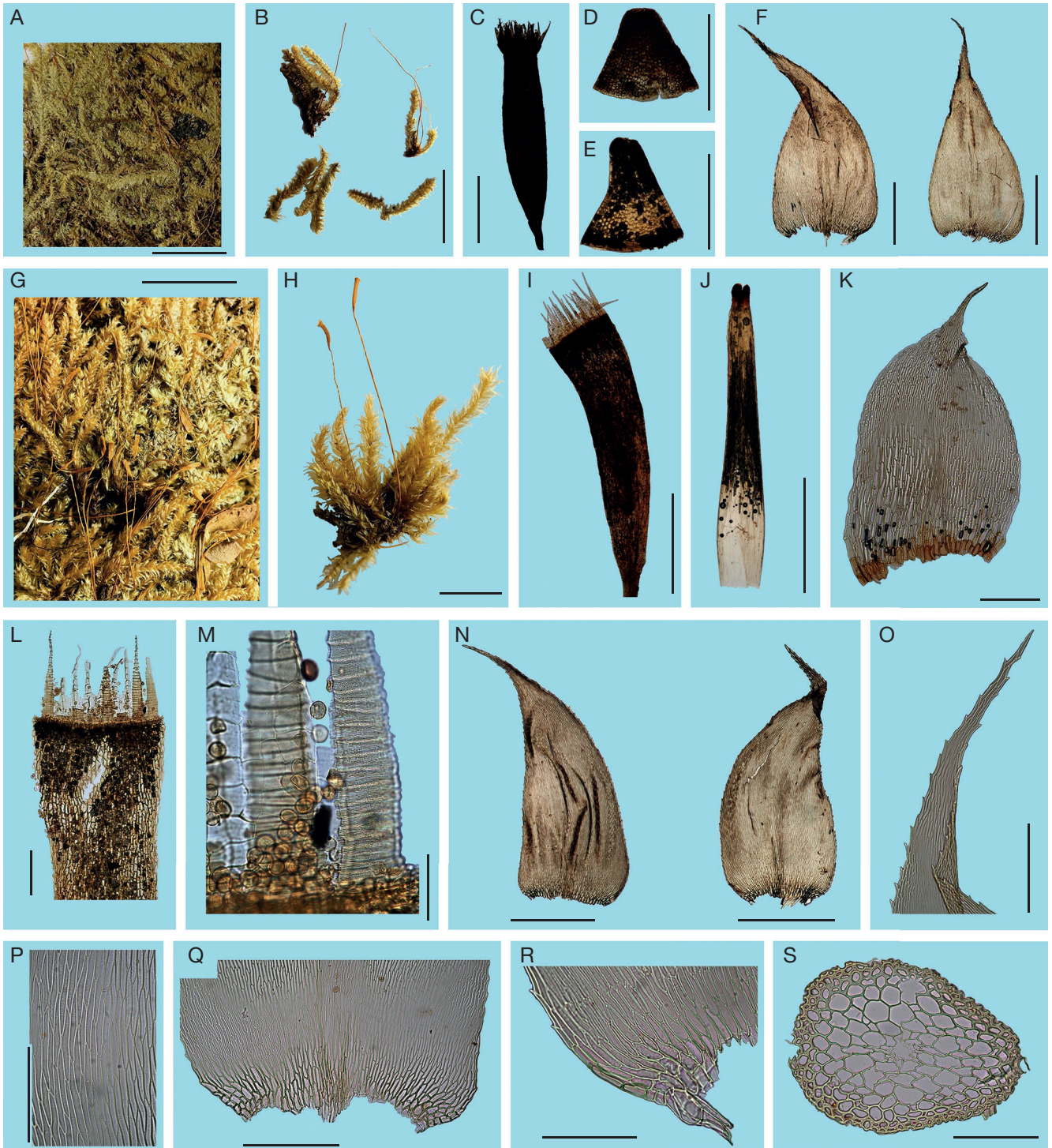


FIG. 1. — *Herzogiella cylindricarpa* (Cardot) Z.Iwats.: **A, G**, growth habit; **B, H**, individual habit; **C, I**, capsules. **D, E**, opercula; **F, N**, leaves; **J**, calyptra; **K**, perichaetial leaf; **L**, part of peristome and exothecial cells; **M**, peristome teeth; **O**, leaf apex; **P**, median leaf cells. **Q**, basal leaf cells; **R**, alar cells; **S**, cross section of stem. A-D, F, prepared from Perrier de la Bathie s.n. (syntype of *Ectropothecium perrieri*, NY); E, G-S, prepared from Crosby & Crosby 7068, MO). A, B, G, 10 mm; C, I, J, 1 mm; D-F, N, 0.5 mm; H, 5 mm; K, L, O, 0.2 mm; M, 50 μ m; P, R, S, 100 μ m; Q, 200 μ m.

name reported in Marline *et al.* (2012). However, one of the Perrier de la Bathie collections that form the basis of Thériot's report (PC0708099, not seen) was annotated by R. Ochyra in 1997 as *Racomitrium subsecundum* (Ochyra in Ellis *et al.* 2020). In addition, we can report this same

species (confirmed by H. Bednarek-Ochyra, in litt.) from the Andringitra region much further to the south. Based on this we believe it is safe to exclude *Bucklandiella membranacea* from the Malagasy flora and replace it with *Bucklandiella subsecunda*.

Family PILOTRICHACEAE Kindb.
Genus *Thamniopsis* (Mitt.) M. Fleisch.

Thamniopsis utacamundiana (Mont.) W.R.Buck

NOTES

Lepidopilum diversifolium Renauld & Cardot [= *Thamniopsis diversifolia* (Renauld & Cardot) Vaz-Imbassahy & D.P.Costa] is characterized by its more or less asymmetrical, ovate-lanceolate to oblong leaves (1.6-1.8 × 0.7-0.9 mm); acute to shortly acuminate apices; heterogeneous leaf cell areolation; weakly bordered leaf margins that are dentate with swollen, bifid teeth; and double costae that extend approximately 1/2-2/3rds the leaf length and are often abaxially spinose. This combination of morphological characters, as noted by Vaz-Imbassahy & Costa (2008, 2009), places *T. diversifolia* “uncomfortably close to some forms of *T. [Thamniopsis] utacamundiana*”. These authors nevertheless maintain the two species as distinct due to the few overall known specimens of *T. diversifolia*. As presently treated, *T. utacamundiana* is a polymorphic species with over 20 synonyms distributed in central, eastern, and southern Africa, throughout northern and southeastern Asia, as well as across Oceania. Among its synonyms are species whose leaf morphology overlaps with that of *T. diversifolia*, offering no consistently reliable differences to distinguish the species. *Lepidopilum thwaitesianum* Mitt. from Sri Lanka and *Hookeria pappeana* Hampe from South Africa, for example, have similarly shaped and sized leaves (1.5-2.0 × 0.7-1.0 mm); acute, broadly acute, or short-acuminate apices; similar leaf cell areolation and dentation on the leaf margins, as well as projecting costae that extend to about the middle of the leaf. The inclusion of these species within the broadly circumscribed *T. utacamundiana* precludes maintaining *T. diversifolia* as distinct.

Thamniopsis utacamundiana (Mont.) W.R.Buck

Brittonia 39: 219 (1987). — *Hookeria utacamundiana* Mont., *Annales des Sciences Naturelles, Botanique*, sér. 2, 17: 247 (1842). — *Lepidopilum utacamundianum* (Mont.) Mitt., *Journal of the Proceedings of the Linnean Society, Botany, Supplement* 1 (2): 116 (1859). — *Hookeriopsis utacamundiana* (Mont.) Broth., *Natürlichen Pflanzenfamilien* 1 (3): 942 (1907). — Type: [India, Nilgiri Mts.] Truncicolam in sylvis propè *Ootacmund* fertilem perfectamque hanc pulchram speciem invenit cl. Perrottet (syn-, BM, GOET, NY, PC, not seen)

Lepidopilum diversifolium Renauld & Cardot, *Revue de Botanique, Bulletin Mensuel* 9: 397 (1891).

Hookeriopsis diversifolia (Renauld & Cardot) Broth. ex Cardot, *Histoire physique, naturelle et politique de Madagascar, Mousses*: 412 (1915).

Thamniopsis diversifolia (Renauld & Cardot) Vaz-Imbassahy & D.P.Costa, **syn. nov.**, *Nova Hedwigia* 87: 239 (2008). — Type: Madagascar: Diego Suarez. leg. *Chenagon s.n.* (PC0105496, lectotype, designated here <<https://plants.jstor.org/stable/10.5555/al.ap.specimen.pc0105496>>; PC0105492, PC0105493, PC0105495, PC0105497, isolecto-).

SPECIMENS EXAMINED. — **Madagascar.** Antsiranana: *Magill, Pócs & LaFarge-England 9809b* (MO[MO-4429524]!) & *9903* (MO[MO-4457004]!). Toamasina: *Crosby & Crosby 5224* (MO[MO-2192612]!) & *5558* (MO[MO-6890831]!, TAN); *Magill, Pócs & LaFarge-England 9599* (MO[MO-4429138]!).

NOTES

There are five specimens in PC that have label information matching the type citation in Renauld’s (1891) protologue of *L. diversifolium*. Four of these (PC0105493, PC0105495, PC0105496 and PC0105497) are marked as specimens from Renauld’s personal herbarium and have labels in his handwriting. One specimen (PC0105492) is from Cardot’s personal herbarium, but otherwise identical to the others. Among these collections is a large specimen from Renauld’s herbarium that was annotated in 2007 as the holotype by Vaz-Imbassahy & Costa. It is selected as the lectotype.

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