

**EAST AFRICAN BRYOPHYTES XXXIII.
CAMPYLOPOIDEAE (LEUCOBRYACEAE, MUSCI)
FROM THE INDIAN OCEAN ISLANDS**

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This paper contains 142 Campylopoideae records from 10 collecting trips of the author with his colleagues in the East African islands. Among the 27 taxa 15 records were new to a certain island, of which 4 were known before only from continental Africa. With these the known number of species on the Indian Ocean islands raises from 30 to 34. Observations on the ecology, distribution and illustrations of most species are also given.

Key words: Africa, Comores, Madagascar, Mafia, Mauritius, phytogeography, Réunion, Seychelles

INTRODUCTION

The Campylopoideae collections made in tropical East Africa by the author and his colleagues were identified and published first by Bizot (in Bizot and Pócs 1974, 1979, Bizot *et al.* 1977, 1978), then by Ochyra (Ochyra and Pócs 1983, 1986*a, b*) and later by Frahm in his monograph (1985*a*) and in his posthumous paper (Frahm 2021). A large collection, mainly from the Indian Ocean islands of East Africa collected between 1987 and 1996, were sent also to Jan-Peter Frahm, which remained unidentified with their first specimens in EGR and duplicates were deposited after his death in the herbarium of the Botanic Garden and Botanical Museum Berlin-Dahlem (B). The author identified these and now publishes the detailed records of the less common species. From the 27 identified taxa 15 proved to be new to some of the islands and 4 of them were known before only in continental Africa. By the identification and establishing the up to date nomenclature of species the following references were used: Bizot and Kilbertus (1979), Frahm (1982*a, b*, 1985*a*, 1994, 2000), Padberg and Frahm (1985), Stech (1999) and Zijlstra (1998). To define the novelty of records and distribution of species apart from the above were used Ah-Peng and Bardat (2005), Crosby *et al.* (1983), Een (2000), Frahm (1985*b*, 1993, 2021), Frahm *et al.* (2009), Frahm and Ho (2009), Frahm *et al.* (2012), O'Shea (1995, 2006), O'Shea *et al.* (1996), Tixier and Guého (1997).

We call East African or western Indian Ocean islands the group of isles eastwards from East Africa to the Rodrigues Island at the latitude of 63.5°E (see Fig. 1). These isles are geologically very different: the oldest are of Precambrian origin, as Madagascar and the Inner Seychelles, their base is built up of granite and gneiss, with different later deposits. Others are of volcanic origin.

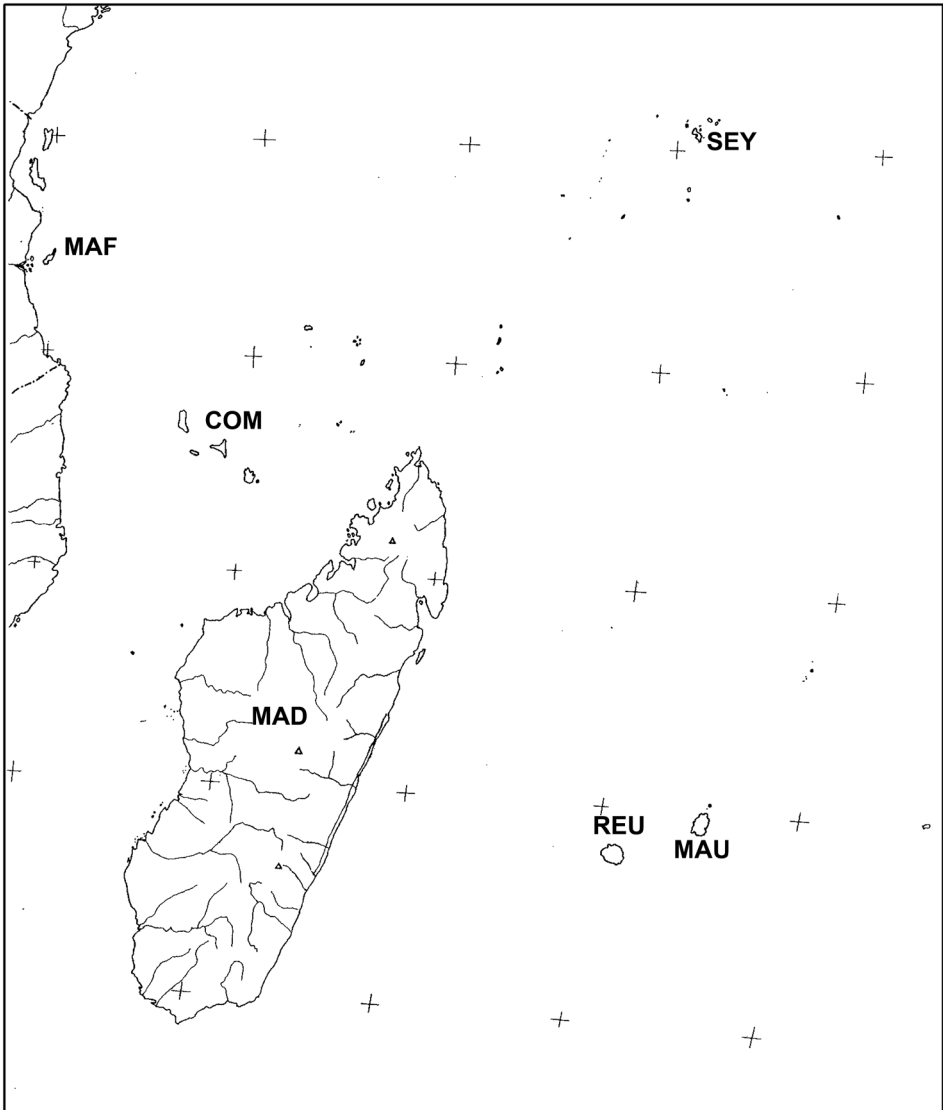


Fig. 1. The East African or western Indian Ocean islands, where the *Campylopus* specimens were collected. Abbreviations see under the title of Enumeration

origin, usually developing in a series subsequently above hot spots, like Comoro Islands and the Mascarenes, which built up mostly of basaltic lava. The third group are of more recent origin, either coral islands on different basement (like Aldabra or Agalega Islands) or sand keys on the continental shelf, as Mafia Island near the African coast (see more in details by Pócs 1997).

ENUMERATION OF THE SPECIES

The following abbreviations are used: **COM** = Comoro Islands, **MAD** = Madagascar, **MAF** = Mafia Island, **MAU** = Mauritius, **REU** = Réunion, **SEY** = Seychelles. The first two digits of collecting localities means the year of the collection. All specimens are deposited both in EGR and B, except for those, which are marked by EGR.

Atractylocarpus madagascariensis (Thér.) Padberg et J.-P. Frahm (Syn.: *Metzlerella madagascariensis* Thér., *Metzleria madagascariensis* (Thér.) J.-P. Frahm) – **MAD**: (Alaotra-Mangoro), Mantady Forest Reserve NE of Andasibe (Périnet), in submontane rainforest near the end of the graphite mining road at 1,030 m, *Vojtkó 9485/CE*. **REU**: E edge of Cirque de Mafate. Montane rainforest in Ravine Savon on the S side of Plateau Mahot, at 1,350–1,550 m, *Kis 9427/EU*; *Acacia heterophylla-Cyathea glauca* woodland in Forêt de Bélouve, 1 km E from the Forest Station, at 1,450–1,500 m, *Kis 9614/X*. – Lemurian species in the sense of Tixier (1978) and Pócs (1997, 1999), indicating a distribution mainly on the Indian Ocean islands belonging biogeographically to Africa, eastwards to the Rodrigues Island at 63.5° E longitude, but with occurrence also on the Crystalline Arc and other East African mountains.

Campylopus arctocarpus (Hornsch.) Mitt. subsp. *madecassus* (Besch.) J.-P. Frahm (Syn.: *Campylopus madecassus* Besch., *Campylopus madegassus* Dix.) – **REU**: S slope of Piton Larde, at 1,450–1,650 m, *G. Kis 9653/N*. **COM**: Ngazidja (Grande Comore) Island. On 15 years old basaltic lava flow (from the 1977 eruption) above Singani village. 43° 19' 16" E, *Magill & Pócs MO 10911 (EGR 9361/D)*. – A Lemurian species, new to the Comoro Islands.

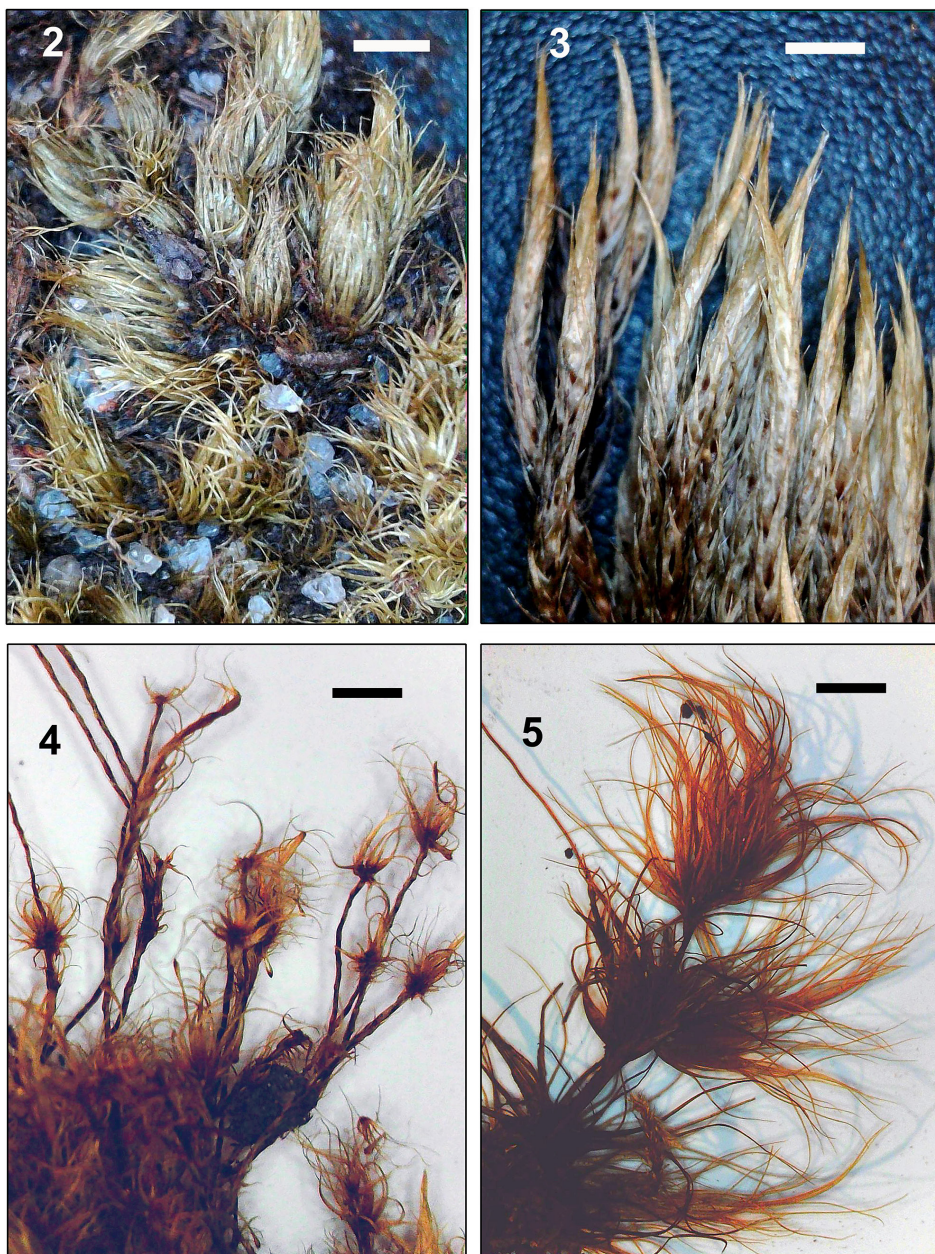
Campylopus aureonitens (Müll. Hal.) A. Jaeger – **REU**: Subalpine ericaceous bush on the N sloping plateau of "la Roche Ecrite", S of St Denis, at 2,100 m, *Vojtkó 9420/CO*. – Southeast African species with an isolated occurrence in Angola.

Campylopus bartramiaecus (Müll. Hal.) Thér. – **MAD**: (Analamanga), Réserve Spéciale Ambohitantely E of Manankazo village (near Ankazazobe town), at 1,600 m alt. Relict sclerophyllous plateau forest with 10–12 m high canopy, *Kis 9444/F*. – Hitherto known from SE Africa and Réunion and New Zealand, new to Madagascar.

Campylopus bicolor (Müll. Hal.) Wils. subsp. *atroluteus* (Müll. Hal.) J.-P. Frahm – **SEY**: Mahé Island, Morne Seychellois Nat. Park. Copolia summit. Open, granite platform (glacis) at 480–510 m, *Pócs 9335/R*. – A South African species, new to the Seychelles.

Campylopus crateris Besch. – **REU**: Subalpine ericaceous bush on the N sloping plateau of "la Roche Ecrite", S of St Denis, at 2,100 m, *Kónya 9420/CG*. – Lemurian subendemic with one occurrence in southern Kenya, not rare in Réunion.

Campylopus decaryi Thér. – **MAD**: Fianarantsoa prov., Andringitra Mts Nature Reserve. Mesic elfin forest dominated by bamboos, at 1,450–1,700 m alt., 6 km E from Pic



Figs 2–5. Habit of different species. 2 = *Campylopus flaccidus* Ren. et Card. (from Pócs & Krog 89204/K). 3 = *Campylopus julaceus* subsp. *arbogastii* (Ren. et Card.) J.-P. Frahm (from Vojtkó 9657/A). 4 = *Campylopus flavicomis* Müll. Hal. ex Broth. (from Orbán 9484/CB). All scale bars 20 μ m. 5 = *Campylopus trachylepharon* subsp. *comatus* (Ren. et Card.) J.-P. Frahm at the same magnification, as the previous (from Kis 9487/EG)

Boby, *Kis 9475/FX*. **REU**: Ericaceous heath at and above the timberline on the S slope of Piton de la Fournaise volcano along the trail leading to Puys Ramond, 1,390–2,170 m, *Vojtkó 9613/X*. – Lemurian species, new to Réunion.

Campylopus flaccidus Ren. et Card. – **MAF**: SE of Kilindoni, near Kitemondo, *Erica mafiensis* heath (“Pori”), on open ground covers large areas of the white quartz sand, at 10–16 m. *Pócs 87007/N, 89204/K*. **MAD**: Isalo National Park. “Piscine Naturelle” 5 km W of Ranohira, sandstone canyon with *Pandanus pulcher*, at 800 m alt. *Szabó & Orbán 9456/CE & CK*. – A typical xerophyte of open habitats and temporarily dry substrate. Widespread in eastern and southern Africa from Sudan to Cape and in Madagascar, new to Mafia Island.

Campylopus flavicomma Müll. Hal. ex Broth. (Syn.: *Bryohumbertia metzlerelloides* P. de la Varde et Thér., *Bryohumbertia flavicomma* (Müll. Hal. ex Broth.) J.-P. Frahm, *Campylopus flageyi* Ren. et Card.) – **REU**: Plaine des Palmistes, lava flow at the E edge of Premier Villages Bas, at 900 m altitude. In heath-like vegetation on peaty ground, *Kis & Orbán 9435/CE*; *Acacia heterophylla-Cyathea glauca* woodland in Forêt de Belouve, 1 km E from the Forest Station, at 1,450–1,500 m, *Kis 9614/V*; Cirque de Cilaos, montane evergreen Forêt de la Mare à Joseph, E from le Bloc along the path at 1,370–1,380 m, *Kis 9638/DX*; **MAD**: (Haute Miasatra) Montane rainforest, bordered by *Sphagnum* marshes on the hill with radio tower, 10 km N of Fianarantsoa, at 1,230–1,360 m, *Orbán 9461/CX*; Andringitra Mts Nature Reserve. Montane rainforests on the W side of Korokoro River, at 750–1,000 m, *Kis 9472/FC*; Bog forest dominated by two *Pandanus* spp. in a small depression called “Akofa” on the ridge E from Korokoro River, at 920 m; Peat bogs with *Eriocaulon*, *Drosera* and *Sphagnum* spp. on the Ambavafatra Plateau at 1,270 m, *Kis 9478/EH*; (Alaotra-Mangoro) Mantady Forest Reserve NE of Andasibe (Périnet). *Pandanus pulcher* swamp forest in Saharanga Valley, at 995 m alt., *Orbán 9484/CB*; Central E Madagascar. Degraded, secondary montane evergreen forest 4 km E of Moramanga, near Antsahotsaka village, *Kis 9491/CA*. – *Campylopus flavicomma* is a shade tolerant, small species occurring on the ground of closed montane rainforests. A Lemurian species distributed in SE Africa and in the Indian Ocean islands. Closely related to the Neotropical *Campylopus filifolius* (Hornsch.) Mitt. (Frahm 1985, 2021).

Campylopus flexuosus (Hedw.) Brid. var. *flexuosus* – **COM**: Ngazidja (Grande Comore) Island. Col du Dibwani, “Plateau des Fougères” between Bahani and Koimbani villages at 560 m, in remnants of dry forest, *Pócs, Magill & Rupf 9263/AC*. – Almost pantropical species distributed also in the Atlantic part of Europe. The commonest species of shady and half-shady habitats on all islands from the sea level to the upper forest limit, collected from 16 habitats in many specimens from the Indian Ocean islands, but proved to be new to the Comoros.

Campylopus flexuosus (Hedw.) Brid. var. *incacorralis* (Herz.) J.-P. Frahm (Syn.: *Campylopus incacorralis* Herz.) – **COM**: Ngazidja (Grande Comore) Island. Degraded rainforest on the W slope of Kartala volcano, above Mvouni Village, at 840 m, *Pócs & Manktelow 9150/R*. **MAD**: (Sava) Reserve Intégrale Nationale de Marojezy, Cyperaceae and mossy mires around the tarns on the main summit, at 2,050 m, *Pócs, Magill & LaFarge-England 90018/F*; (Fianarantsoa prov.) Andringitra Mts Nature Reserve, bog forest dominated by two *Pandanus* spp. in a small depression called “Akofa” on the ridge E from Korokoro River, at 920 m, *Kis 9476/ER & ET*; Ericaceous heath forest at the N foot of Mt Vohipia near Ambavafatra, at 1,270–1,350 m, *Kis 9477/EO*; (Vakinankaratra) Manjakatempo, Ericaceous heath-forest (3–4 m tall) on the SE slopes of Mt Andriandrahitokana, at 1,975 m. – An Afro-American disjunct, widespread in the Andes and in the East African mountains and known also from Réunion and Mauritius, but new to the flora of the Comoros and of Madagascar.

Campylopus hildebrandtii (Müll. Hal.) A. Jaeger – **REU**: E edge of Cirque de Mafate. Mossy elfin forest (2–4 m tall) on the SW ridge and on the summit of Piton Marmite at

1,820–1,878 m, *Orbán* 9424/CK; Ft de Belouve. Ravine Bringellier SSE from Gite Belouve, on shady volcanic cliff at 1,460 m, *Rózsa* 9647/D. – Scattered all over sub-Saharan Africa from Cameroon to Cape and to Réunion.

Campylopus introflexus (Hedw.) Brid. – **MAD**: (Sava) Reserve Integrale Nationale de Marojezy, Cyperaceae and mossy mires around the tarns on the main summit, at 2,050 m, *Pócs, Magill & LaFarge-England* 90018/B; (Ihorombe) Isalo National Park, dry, xeric vegetation with *Pachypodium rosulatum* on slopes of sandstone canyon above “Piscine Naturelle”, at 800–1,000 m, *Orbán* 9455/CX; (Fianarantsoa prov.) Andringitra Mts near Ambalavao village. Plateau forest with granite outcrops and cultivated patches at 1,012 m, *Orbán* 9459CI. **SEY**: Mahé Island, Morne Seychellois Nat. Park. On rock boulders on the ridge near Trois Frères Cross, at 640–695 m, *Pócs* 9320/AG & BL. – A species quite widespread in the southern temperate belt penetrating in tropics and introduced into Atlantic Europe. It is known in the southern part of Africa (Botswana, Lesotho, Namibia, South African Republic, Swaziland, and Zimbabwe) and from Cameroon, Chad, Ascension, St Helena, Réunion and Mauritius islands. It is new to Madagascar and the Seychelles.

Campylopus jamesonii (Hook.) A. Jaeger – **REU**: The lowermost occurrence, where our team collected, was Cirque de Salazie. E slope of “la Roche Ecrite”, N from Grand Ilet village. Open evergreen bushes on steep rocks at 1,500 m, *Orbán* 9416/CT. – An Andean-Afromontane disjunct, common also on Réunion Island from the timberline up to 2,700 m.

Campylopus johannis-meyeri (Müll. Hal.) Kindb. – **SEY**: Mahé Island, Morne Seychellois Nat. Park. *Pandanus*-palm thicket on the rocky summit (glacis) of Montagne Palmiste at 240–280 m, *Orbán* 9338/S. – Afromontane-alpine species till now only known from the continent. New to the Indian Ocean islands at an unusual low altitude.

Campylopus julaceus Jaeger subsp. *arbogastii* (Ren. et Card.) J.-P. Frahm – **MAD**: (Haute Miasatra) Ranomafana National Park. Open, seeping gneiss rocks along the Fianarantsoa–Ifanadiana road near Vohiparara, at 1,115 m, *Orbán* 9465/CF. **REU**: Montane rainforest with *Pandanus montanus* on the SW slopes of Piton de la Fournaise, at 800–1,300, *Szabó* 9612/I, *Vojtkó* 9657/A; Cirque de Cilaos, at the junction of Bras Sec road and the tourist trail No. G.R.1, at 1,320–1,390 m, in *Acacia heterophylla* forest, *Pócs* 9681/J. **SEY**: Mahé Island. Montane evergreen forest on the NE escarpment and summit ridge of Mt Trois Frères, W of Victoria at 430–770 m, *Pócs* 9315/AF & AP, *Orbán* 9343/BH; NW ridge of New Savy summit N from USAF Satellite Tracking Station. Evergreen bush on open rocks at 520 m, *Kis* 9332/H & I. – Indian Ocean islands vicariant of *Campylopus julaceus* subsp. *julaceus* of eastern Brasil. It prefers the open places with shallow soil, in montane habitats from about 500 m to the forest limit.

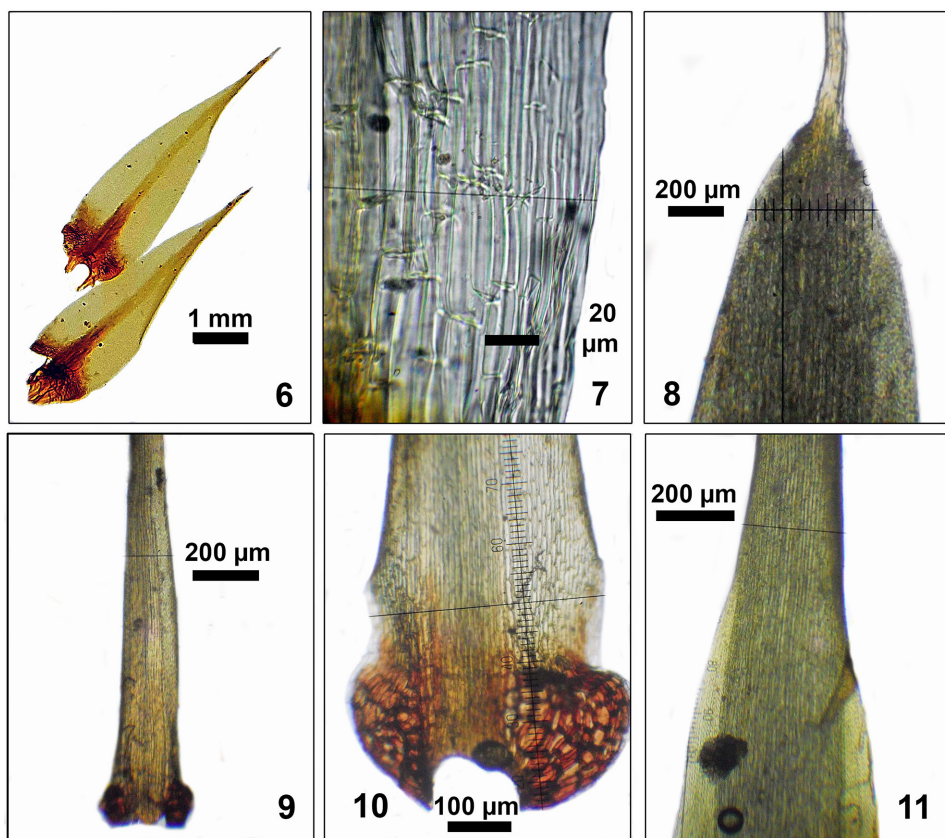
Campylopus nanophyllus Müll. Hal. ex Broth. – **MAD**: (Analamanga) granite outcrops in secondary plateau grassland, 69 km NW of Antananarivo along the Mahajanga road, N of Soaniada-Nana village at 1,410 m, *Orbán* 9438/CB; Antananarivo prov., Mt Angavokely near Carion village, on flat topped granite rock with open *Xerophyta* (Velloziaceae) bush at 1,700 m, *Orbán* 9454/CJ & EJ; (Irhombe) Isalo National Park. “Piscine Naturelle” 5 km W of Ranohira. Sandstone canyon with *Pandanus pulcher*, at 800 m, *Vojtkó* 9456/CB. – A species with scattered distribution all over Subsaharan Africa, but seems to be rare. A tiny xerophytic species of sunhit rock surfaces.

Campylopus nivalis (Brid.) Brid. (Syn.: *Campylopus chrismarii* (Müll. Hal.) Mitt.) – **REU**: Cirque de Salazie. Pleine des Merles. Ericaceous woodland with thick (60 cm) moss layer of *Sphagnum* and *Breutelia* at 1,800 m, *Orbán* 9422/CF; E edge of Cirque de Mafate. Mossy elfin forest (2–4 m tall) on the SW ridge and on the summit of Piton Marmite at 1,820–1,878 m, *Orbán* 9424/CP; NE ridge of the Piton des Neiges summit. Subalpine ericaceous bush at 1,800–2,500 m, *Vojtkó* 9239/CF. – *Campylopus nivalis* is an Andean-African

species restricted to the subalpine and alpine belts. Therefore it occurs only on the highest Indian Ocean islands, like Madagascar and Réunion.

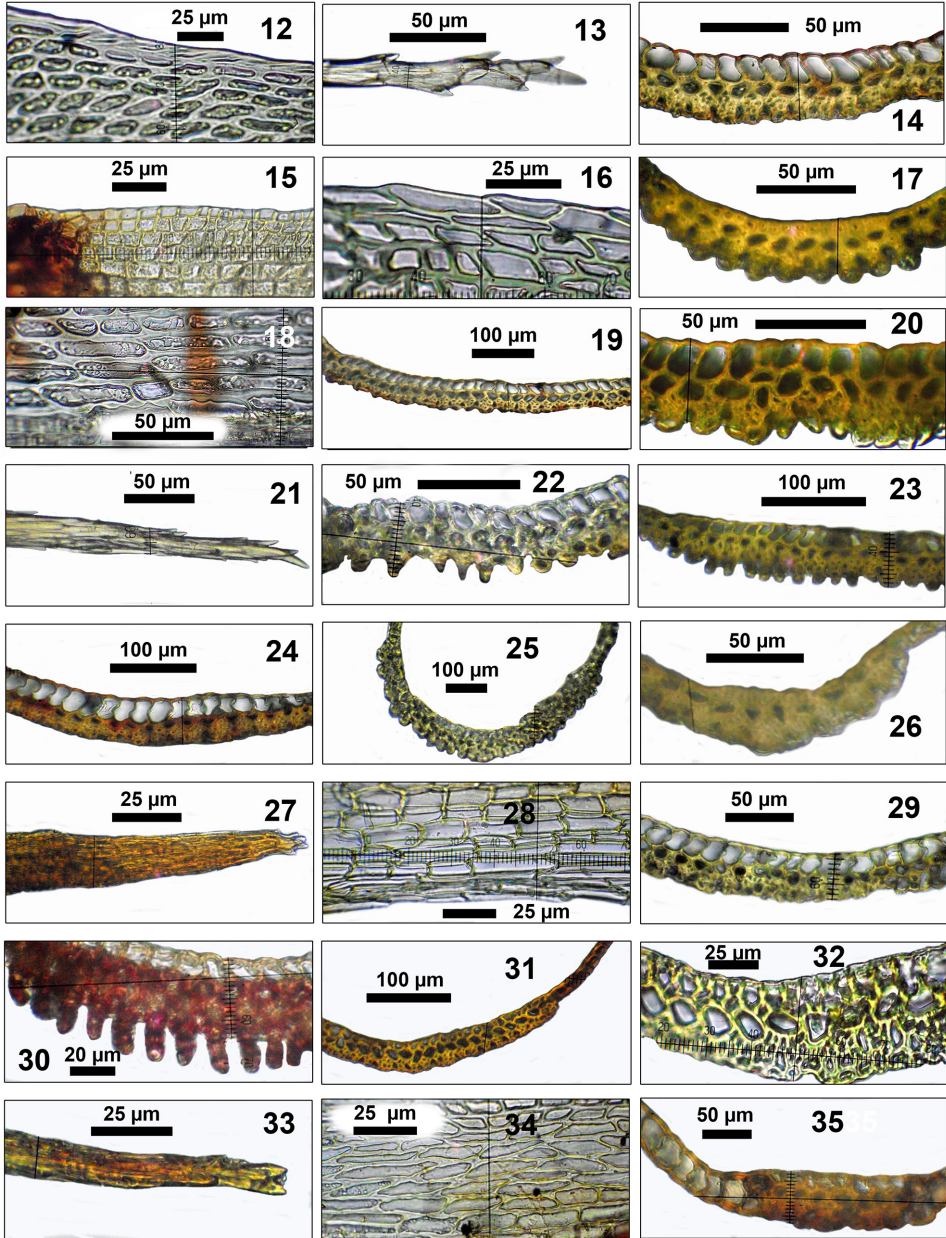
Campylopus perichaetialis P. de la Varde et Thér. – REU: NE ridge of Piton des Neiges. Subalpine ericaceous bush at 1,800–2,500 m, *Kónya* 9639/C; Alpine semidesert on the ESE ridge of Piton des Neiges summit, at 2,700–3,000 m, *Vojtkó* 9440/CO. SEY: Mahé Island, Morne Seychellois Nat. Park. Mossy elfin forest on the summit ridge SW of Trois Frères rocks, at 740–770 m, *Orbán* 9343/BF, BG. – Afromontane species previously known only from the continent. New to the Indian Ocean islands.

Campylopus pilifer Brid. – It was collected at 19 localities on all islands. – Widely distributed in the tropical, subtropical and oceanic parts of America and Eurasia. Very common xerophyte occurring mostly on acidic rocky or sandy ground.



Figs 6–11. Details of different species. 6 = Leaves of *Campylopus flaccidus* Ren. et Card. (from *Pócs & Krog* 89204/K). 7 = Inner and outer basal lamina cells of *Campylopus julaceus* subsp. *arbogastii* (Ren. et Card.) J.-P. Frahm (from *Vojtkó* 9657/A). 8 = Obtuse leaf apex of the same specimen. 9 = Leaf of *Campylopus nanophyllus* Müll. Hal. ex Broth. (from *Orbán* 9438/CB). 10 = Leaf base of *Campylopus trachyblepharon* subsp. *comatus* (Ren. et Card.) J.-P. Frahm (from *Kis* 9487/EG). 11 = Acute leaf apex of *Campylopus pilifer* Brid. in contrast to the obtuse one of *C. julaceus* (from *Vojtkó* 9440/CO)

Campylopus praetermissus J.-P. Frahm – MAD: Antananarivo prov., (Analamanga) Mt Angavokely near Carion village. Roadside vegetation among *Eucalyptus* and *Pinus* plantations at 1,400–1,650 m, Orbán 9453/CF. REU: *Acacia heterophylla*-*Cyathea glauca* woodland in Forêt de Bélouve, 1 km E from the Forest Station, at 1,450–1,500 m, Gyarmati 9614/



DS. – A relatively rare (or overlooked) tropical African species new to Madagascar and the second locality in Réunion Island.

Campylopus pyriformis (Schultz) Brid. – **MAD**: (Fianarantsoa prov.) Andringitra Mts Nature Reserve near Antanifotsi. On the path to Pic Boby. Secondary grassland with ericaceous bush patches at 1,900–2,000 m, *Orbán* 9463/CF, CH; Same nature reserve, peat bogs with *Eriocaulon*, *Drosera* and *Sphagnum* spp. on the Ambavafatra Plateau at 1,270 m, *Kis* 9478/EI. **REU**: Cirque de Salazie. Pleine des Merles. Ericaceous woodland with thick (60 cm) moss layer of *Sphagnum* and *Breutelia* at 1,800 m, *Orbán* 9422/CG; **MAU**: Moka Region, Quartier Militaire distr., on stone heaps in sugar cane fields W of Melrose village, at 330 m, *Pócs* 9678/B. – Bipolar temperate species also in tropical mountains (in the Northern Hemisphere occurs only in Oceanic Europe). New to the flora of Madagascar and Mauritius.

Campylopus robillardae Besch. – **MAU**: Perrier Nature Reserve in the neighbourhood of Mare aux Vacoas, in submontane *Sideroxylon puberulum* thicket on volcanic rocks, 540 m, *Pócs* 9529/X. **REU**: Cirque de Salazie. E slope of “la Roche Ecrite”, N of Grand Ilet village. Open, ericaceous heath on rocky slopes between 1,700 and 2,100 m, *Kis* 9418/CP. **SEY**: Mahé Island, Morne Seychellois Nat. Park, on the rocky summit (glacis) of Mt Palmiste at 240–280 m, *Kis* 9338/S; Same island, mossy elfin forest on the summit ridge SW of Trois Frères rocks, at 740–770 m, *Orbán* 9443/BG. – Lemurian species.

Campylopus thwaitesii (Mitt.) A. Jaeger (Syn.: *Campylopus cardotii* Thér.) – It is widespread in the Indian Ocean islands. We collected in Madagascar and Réunion at 8 localities. – A Lemurian species.

Campylopus torrentis Thér. et P. de la Varde – **REU**: Forêt de Bélouve. Montane mossy forest along the trail from the Forest Station to Pic des Chèvres, at 1,550–1,610 m, *Kis* 9617/AC. – A rare species known only from Gabon and Nigeria in West Africa. New to the whole East Africa.

Campylopus trachyblepharon (Müll. Hal.) Mitt. subsp. *comatus* (Ren. et Card.) J.-P. Frahm – **MAD**: (Alaotra-Mangora) montane rainforest on the rocky ridge of Mt An-



Figs 12–35. Details of different species. 12 = *Campylopus aureonitens* (Müll. Hal.) A. Jaeger. Upper lamina cells (from *Vojtkó* 9420/CO). 13 = Tip of hyaline awn from the same specimen. 14 = *Campylopus bartramiaceus* (Müll. Hal.) Thér. Proximal section of costa (from *Kis* 9444/EF). 15 = *Campylopus flaccidus* Ren. et Card. Basal lamina cells (from *Vojtkó* 9456/CE). 16 = Upper lamina cells (from *Orbán* 9463/H). 17 = Proximal section of costa (from *Orbán* 9463/HM). 18 = *Campylopus flexuosus* var. *incacorrallis* (Herz.) J.-P. Frahm. Pitted basal lamina cells (from *Pócs* 9150/R). 19 = Proximal section of costa (from *Kis* 9476/ET). 20 = The same (from *Kis* 9477/EO). 21 = *Campylopus julaceus* subsp. *arbogastii* (Ren. et Card.) J.-P. Frahm. Tip of hyaline awn (from *Vojtkó* 9657/A). 22 = Proximal section of costa (from *Kis* 9332/H). The same (from *Vojtkó* 9657/A). 24 = *Campylopus jamesonii* (Hook.) A. Jaeg. Proximal section of costa (from *Orbán* 9423/CC). 25 = *Campylopus johannis-meyeri* (Müll. Hal.) Par. Proximal section of leaf (from *Orbán* 9338/S). 26 = *Campylopus nanophyllus* Müll. Hal. ex Broth. Proximal section of leaf (from *Orbán* 9438/CB). 27 = *Campylopus perichaetialis* P. de la Varde et Thér. Awn-like tip of leaf apex (from *Orbán* 9443/BG). 28 = Thin walled basal lamina cells (from the same specimen). 29 = Proximal section of costa (from the same specimen). 30 = *Campylopus pilifer* Brid. Proximal section of costa (from *Vojtkó* 9659/A). 31 = *Campylopus praetermissus* J.-P. Frahm. Proximal section of leaf (from *Szabó* 9614/DS). 32 = Proximal section of costa (from the same specimen). 33 = *Campylopus torrentis* Thér. et P. de la Varde. Awn-like tip of leaf apex (from *Kis* 9617/AC). 34 = *Campylopus trachyblepharon* subsp. *comatus* (Ren. et Card.) J.-P. Frahm. Pitted basal lamina cells (from *Kis* & *Pócs* 9332/G). 35 = Proximal section of leaf (from *Kis* 9612/M).

driana-vibe, 5 km ESE of Andasibe (Périnet), at 950–1,050 m, *Kis 9487/EG*. **REU**: Montane rainforest with *Pandanus montanus* on the S slopes of Piton de la Fournaise, along the path leading to Puy Ramond, at 800–960 m, *Kis 9612/H*. **SEY**: Mahé Island, Morne Seychellois Nat. Park. Mossy elfin forest with rock boulders on the ridge near Trois Frères Cross, at 640–770 m, *Kis & Pócs 9320/AT*, *Orbán 9343/BG*, BK; NW ridge of New Savy summit N from USAF Satellite Tracking Station. Evergreen bush on open rocks at 520 m, *Kis & Pócs 9332/G*; Morne Seychellois Nat. Park. Copolia summit. Open, granite platform (glacis) at 480–510 m, *Kis 9335/V*; Elfin forest on the summit ridge of Mt Le Niol at the W side of Bernard Peak, at 630–660 m, *Orbán 9351/BF*. – Vicariant of *Campylopus trachyblepharon* subsp. *trachyblepharon* of Brasil, endemic subspecies of the Indian Ocean islands and new to Seychelles.

DISCUSSION

Analysing the distribution of Campylopoideae species of the Indian Ocean islands, it turned out that only one strictly endemic taxon occurs there, what is a vicariant subspecies of a South American species. It is surprising, comparing to the vascular or cryptogamic floras of Madagascar and neighbouring islands. According to estimates, the Indian Ocean islands have 20% of liverwort endemics (Vanderpoorten and Hallingbäck 2008, based on Wigginton pers. comm.) and Réunion Island has 14% of moss endemics (Ah Peng *et al.* 2010). The low number of endemics among the *Campylopus* taxa of the area may be interpreted by the relatively small spore size: 7.2–15 µm (Luizi-Pronzo and Barth 1999) and the ability of vegetative reproduction of most Campylopoideae, which both enhance long range air dispersal (Zanten and Pócs 1981). At the same time there are three bicontinental (Afro-American) disjuncts, all of them occur in altimontane habitats.

There is a good number (8) of subendemic, so called Lemurian taxa, which are widely distributed on the islands, but occur also on continental SE Africa, mainly in the Precambrian crystalline mountains. This seems to confirm a possibility of short range, step by step dispersal or the importance of land connection before the Cretaceous between mainland Africa and Madagascar (Pócs 1975, 1999). The distribution patterns of all known Indian Ocean island Campylopoideae taxa are the following:

Endemic, restricted only to the islands	1	<i>Campylopus trachyblepharon</i> subsp. <i>comatus</i>
Subendemics occurring also in southeast tropical Africa	8	<i>Atractylocarpus madagascariensis</i> , <i>C. arctocarpos</i> subsp. <i>madecassus</i> , <i>C. aureonitens</i> , <i>C. decaryi</i> , <i>C. pseudobicolor</i> , <i>C. robillardiei</i> , <i>C. schmidii</i> , <i>C. thwaitesii</i>
Disjuncts in S Africa and the Indian Ocean Islands	4	<i>C. bartramiaceus</i> , <i>C. bicolor</i> subsp. <i>atroluteus</i> , <i>C. crateris</i> , <i>C. julaceus</i> subsp. <i>arbogastii</i>
Widespread Afromontane species	4	<i>C. cambouei</i> , <i>C. flavicoma</i> , <i>C. johannis-meyeri</i> , <i>C. perichaetialis</i>

Widespread tropical African species	9	<i>C. arcuatus</i> , <i>C. aureonitens</i> , <i>C. flaccidus</i> , <i>C. nanophyllus</i> , <i>C. hildebrandtii</i> , <i>C. perpusillus</i> , <i>C. praetermissus</i> , <i>C. smaragdinus</i> , <i>C. torrentis</i>
Afro-American bicontinental disjuncts	3	<i>Campylopus flexuosus</i> var. <i>incacorralis</i> , <i>C. jamesonii</i> , <i>C. nivalis</i>
Bipolar temperate species	2	<i>C. flexuosus</i> , <i>C. pyriformis</i>
Southern temperate species	2	<i>C. catarractilis</i> , <i>C. introflexus</i> (introduced in Europe)
Cosmopolite	2	<i>C. fragilis</i> , <i>C. pilifer</i>

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