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## New records and additions to the hepatic flora of Uganda 2.

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**Abstract.** 82 liverwort taxa are recorded from Uganda, of which 24 are new to the flora of the country. *Colura hedbergiana*, *Colura kilimanjarica* and *Harpalejeunea fischeri* found on Mt. Elgon, were previously known only from their type locality on Mt. Kilimanjaro or on Mt. Karisimbi. A Madagascan-Mascarene species, *Plagiochila boryana* was also found on Mt. Elgon. Its only known previous locality in continental Africa was Mt. Kilimanjaro.

### Introduction

The Ugandan bryoflora, based on the available records and compared to other African countries of the same size, seems to be relatively poor. Wigginton & Grolle (1996) listed 155 Hepaticae species from Uganda in contrast to 208 from Kenya, 223 from Rwanda and 389 from Tanzania. The same is true for the mosses. Kis (1985) reported 404 taxa based on literature, while O'Shea's updated list (1997a) enumerates 376 taxa of Musci from Uganda, 476 taxa from Kenya, 293 from Rwanda and 780 from Tanzania. These numbers only partly reflect the species diversity of the concerned areas (O'Shea 1997b), but rather the level of exploration. Pócs

(1982) reported 357 liverwort literature records from Uganda compared to 428 from Rwanda and 1504 from Tanzania, reflecting obviously the different level of exploration of the concerned countries. The habitat diversity of Uganda seems to be as great as that of the neighbouring countries, ranging from dry savanna woodlands through lowland and montane rain forests to the afroalpine habitats. Therefore, further exploration should yield a number of species still unknown from the country. For example, 38 species were recorded for the first time from Uganda out of the 104 species of hepatics collected by K. A. Lye during 1968-1972 (Lye & Pócs 1997). Even the recent account on BBS

Tropical Bryology Group (Porley et al. 1999) reports 51 hepatics out of 75 identified species, as new to Uganda.

The present work is the result of intensive bryophyte collecting carried out by the two authors during September 1997, at least partly in bryologically less known areas of the country. The authors were accompanied on most journeys by Mr. A. B. Katende, and during the Ssesse Islands trip were assisted by Ms. A. Samuela. The voucher specimens are deposited in the herbaria of EGR, MHU and partly in NLH.

The description of the visited localities and habitats are in the sequence of the collecting numbers of T. Pócs. The collectors are K. A. Lye and T. Pócs; localities 97101–97113 also include Ms. A. Samuela as a collector, who helped to gather many epiphylls. The collecting dates are from 4. to 29. September 1997.

- 97100 KAMPALA District, Makerere University Campus. 1240 m alt. 0°20'N, 32°34'E. On planted trees.
- 97101 KALANGALA District, SSESE Islands, W end of BUGALA Island near KAGULUBE village. 1130 m alt. 0°10'S, 32°5'E. *Piptadeniastrum* - *Uapaca* type lowland rainforest.
- 97102 KALANGALA District, SSESE Islands, in the upper middle part of BUGALA Island, near BUSANGA village. 1160 m alt. 0°13'S, 32°12'E. *Piptadeniastrum* - *Uapaca* type lowland rainforest.
- 97103 KALANGALA District, SSESE Islands, BUGALA Island. On the isthmus at LUTOBOKA Point, 1140 m alt. 0°18.5'S, 32°17.5'E. *Piptadeniastrum* - *Uapaca* type lowland rainforest near the lake level.
- 97104 KALANGALA District, SSESE Islands, NE corner of BUGALA Island. 1200-1250 m alt. 0°19.3'S, 32°17.3'E. Rocky type of rainforest alternating with secondary grassland with trees.
- 97105 KALANGALA District, SSESE Islands, BUGALA Island. At MKALWE spring near KALANGALA village, 1180-1240 m alt. 0°19.3'S, 32°15'E. Lowland rainforest with quartzitic rocks.
- 97106 KALANGALA District, SSESE Islands, BUGALA Island. E slopes towards SOZI Peninsula, at 1140 m alt. 0°19.9'S, 32°18'E. Rainforest on red, acidic soil.
- 97107 KALANGALA District, SSESE Islands, JUNGO Forest near MWENO village in the SE part of BUGALA Island. 1170 m alt. 0°26.2'S, 32°16.4'E. *Piptadeniastrum* - *Uapaca* type lowland rainforest, in damp sites with many epiphylls.
- 97108 KALANGALA District, SSESE Islands, BAKIJULURA Forest in the SW part of BUGALA Island above KITOLO Bay at the place called "Mugoye". 1150-1200 m alt. 0°27.7'S, 32°11'E. Lowland rainforest.
- 97109 KALANGALA District, SSESE Islands, NE part of BUGALA Island, near BUGOYA village SW of KALANGALA. 1170-1200 m alt. 0°21.6'S, 32°15.7'E. *Piptadeniastrum* - *Uapaca* type lowland rainforest.
- 97110 KALANGALA District, SSESE Islands, W end of BUGALA Island, 2 km E of BUGOMA village, 1140 m alt. 0°14.8'S, 32°5'E. *Piptadeniastrum* - *Uapaca* type lowland rainforest on alluvial sand near the lake level.
- 97111 MASAKA District. At the N shore of Lake NABUGABO near the NW edge of Lake VICTORIA. E from BALE village, 1140 m alt. 0°19'S, 31°43'E. Mixed *Mischantidium* - *Rhynchospora* bog with *Mesanthemum radicans* (Eriocaulaceae).
- 97112 RAKAI District, BUDDU County. 1 km ENE from KANABULEMU village, 1140 m alt. 0°56.5'S, 31°41.6'E. *Baikiaea*-*Uapaca*-*Podocarpus* swamp forest.

- 97113 RAKAI District, BUDDU County. 1.4 km ENE of KATERA village, 1140 m alt. 0°54.6'S, 31°38.9'E. *Piptadeniastrum* - *Uapaca* type lowland rainforest.
- 97114 RAKAI District, BUDDU County. 3 km ENE of KATERA village, 1137 m alt. 0°54'S, 31°39.7'E. Swamp forest of *Macaranga schweinfurthii*.
- 97115 MUKONO District, KYANGWE County. SEZIBWA Falls 4 km S of NAMATABA village, 1170 m alt. 0°21.4'S, 32°51.8'E. Small forest remnants of steep quartzite rocks.
- 97116 MUKONO District, KYANGWE County. MABIRA Forest Reserve, 8 km NNE from LUGAZI town, 1240-1260 m alt. 0°26.17'N, 32°58.9'E. Lowland rainforest with giant, buttressed trees.
- 97117 KIBOGA District and township area, 1108 m alt. 0°55.6'N, 31°45.4'E. On roadside trees.
- 97118 KIBOGA District. Along Kiboga-Hoima road, 1 km E of KIKONDE, 1085 m alt. 1°16.3'N, 31°29.5'E. Riverine forest.
- 97119 HOIMA District and township area. HOIMA town hall park, 1165 m alt. 1°25.9'N, 31°21.1'E. On stone wall.
- 97120 HOIMA District. ITOHYA Forest 1.5 km SW of MUNTENE village, 25 km WSW of HOIMA town, 1085 m alt. 1°18.2'N, 31°3.4'E. Lowland rain forests with *Phoenix reclinata* patches in valley bottom, undercropped with cocoa trees.
- 97121 HOIMA District. 3 km N of KABWOYA village, 20 km SW of HOIMA town, on the KAGUMUZI ridge, 1180 m alt. 1°15.9'N, 31°5.7'E. Open *Combretum-Terminalia* woodland.
- 97122 HOIMA District, BUGOMA Forest Reserve, 12 km SE from Lake ALBERT, 4-6 km W of KABWOYA village, 1120 m alt. 1°14.2'N, 31°02-03'E. Lowland rainforest.
- 97123 HOIMA District, BUGOMA Forest Reserve, 2-3 km from "Baker's View" at the SE shore of Lake ALBERT, 15 km W from KABWOYA village, 1227 m alt. 1°15.2'N, 30°58.6'E. Secondary *Combretum-Terminalia* woodland.
- 97124 HOIMA District, BUGOMA Forest Reserve, 17 km W of KABWAYE village, 1132 m alt. 1°15'N, 30°57.5'E. Swamp forest with *Phoenix reclinata*.
- 97125 At the border of HOIMA and KIBALE districts along the Hoima-Kyenjojo road, 1109 m alt. 1°7.8'N, 30°59.7'E. Rocky riverine forest along NKUSI River with *Podostemaceae* on the riverbed rocks.
- 97126 KABAROLE District, 4 km N of KYENJOJO. Flat topped granite rocks, 1400 m alt. 0°38.5'N, 30°39.1'E. Dry woodland with *Entada abyssinica*.
- 97127 KABAROLE District. Northern spurs of RUWENZORI Mts. E slopes, 12 km on the Fort Portal-Semliki Road, 1390 m alt. 0°44.5'N, 30°11.7'E. Open woodland with remnants of dry forest at rocky places.
- 97128 BUNDIBUGYO District. Northern spurs of RUWENZORI Mts. On the BURANGA Pass along the Fort Portal-Semliki Road, 1050-1200 m alt. 0°50'N, 30°12-14'E. Open *Combretum* woodland.
- 97129 BUNDIBUGYO District, SEMULIKI National Park. 1 km SSW from SEMPAYA hot springs along the road to BUNDIBUGYO town, below MUNGILO Falls, 675 m alt. 0°50'N, 30°9.8'E. Congo type of lowland rainforest with *Cola gigantea*, *Spondias macrocarpa* and *Cynometra alexandri*.
- 97130 BUNDIBUGYO District and township area at the NE foot of RUWENZORI Mts., 960 m alt. 0°42.8'N, 30°3.6'E. On planted oil palms among houses.

- 97131 BUNDIBUGYO District. Northern spurs of RUWENZORI Mts. On the BURANGA Pass along the Fort Portal–Semliki Road, 1075 m alt. 0°50'N, 30°11.7'E. Shady and rocky riverine forest in a gorge with *Milicia excelsa*.
- 97132 KABAROLE District. Northernmost part of KIBALE Forest Reserve along MPANGA River, 13 km E from FORT PORTAL, 1450-1460 m alt. 0°38'N, 30°23.6'E. Submontane rainforest with many *Ensete edulis* and epiphyllous liverworts.
- 97133 KABAROLE District, FORT PORTAL township area. Along the avenue leading to Mountains of the Moon Hotel, 1520 m alt. 0°40'N, 30°16.3'E. On old roadside trees.
- 97134 KABAROLE District, KYAKA County, between MIGONGWE and KAKABARA villages along the Kyenjojo–Mubenda road, 1315-1350 m alt. 0°32'N, 30°56'E. Dry, sclerophyllous forest.
- 97135 KABAROLE District, KYAKA County, 5 km westwards from KYEGEGWA village along the Kyenjojo–Mubenda road, 1360 m alt. 0°29.3'N, 31°1.3'E. On open, dry granite rock outcrop with *Aloë*, *Aëolanthus*, *Pellaea* and *Cyanotis* species.
- 97136 MUBENDE District, 1 km W of NABINGORA village, along the Kyenjojo–Mubende road, 1400 m alt. 0°29.4'N, 31°10.6'E. Dry, flat topped granite rock outcrop with xeric *Aloë*-*Aëolanthus*-*Crassula* vegetation.
- 97137 MUBENDE District. KASAMBYA Forest Reserve near NABIBUNGO village, 10 km WSW from MUBENDE town, 1280 m alt. 0°30.5'N, 31°19'E. Riverine rainforest with many *Phoenix reclinata* and epiphylls.
- 97138 KAPCHORWA District. NW slope of Mt. ELGON, near SIPI village, at 1765-1800 m alt. 1°20.4'N, 34°22.6'E. On and under sprayed, overhanging volcanic rocks below the upper SIPI Falls.
- 97139 KAPCHORWA District. NW slope of Mt. ELGON, 3 km W of SIPI village, 1620 m alt. 1°20.3'N, 34°21.1'E. On dry roadside rocks.
- 97140 MBALE District. W approach of Mt. ELGON, along SASA Trail. MUDANGE Cliff above BUGITIMWA village, 2200–2350 m alt. 1°10.2'N, 34°24.5'E. Remnants of mesic montane forest with candelabrum *Euphorbia*, *Dombeya* cf. *goetzenii*, *Ilex mitis*, *Canarina eminii*, *Impatiens tinctoria* ssp. *elegantissima*.
- 97141 MBALE District. W approach of Mt. ELGON, along SASA Trail. 2350–2700 m alt. 1°10.4'N, 34°25–26'E. Montane rain forest dominated by *Hagenia abyssinica*, *Podocarpus latifolius*, *Ilex mitis*, *Ocotea usambarensis* and *Afrocrania volkensii*.
- 97142 MBALE District. W approach of Mt. ELGON, along SASA Trail. Around and above SASA River Camp, 2700–3100 m alt. 1°10.3'N, 34°26–27'E. Bamboo (*Sinarundinaria alpina*) stand with patches of broadleaved *Hagenia-Rapanea-Ocotea-Afrocrania* forest. Undergrowth of *Mimulopsis alpina*.
- 97143 MBALE District. W approach of Mt. ELGON, along SASA Trail, 3100–3250 m alt. 1°10.7'N, 34°28'E. Open, 6-12 m tall upper montane *Hagenia - Prunus africanus - Stoebe* forest above the bamboo belt.
- 97144 MBALE District. W approach of Mt. ELGON, along SASA Trail, between Sasa Patrol Hut and the Mud Cave Camp, at 3250-3550 m alt. 1°10'N, 34°29.4'E. Subalpine ericaceous heath with patches of *Senecio elgonensis* moorland in valley bottom.
- 97145 MBALE District. W approach of Mt. ELGON, along SASA Trail, 3650-3750

- m alt., below JACKSON Pool. 1°09.6'N, 34°30.7'E. Dripping cliffs surrounded by *Senecio elgonensis* moorland and *Helichrysum* - grass tussock.
- 97146 KAPCHORWA District. At the W rim of Mt. ELGON Caldera, 3830 m alt. 1°9.45'N, 34°31.6'E. Dried up pools.
- 97147 KAPCHORWA District. At inner W side of Mt. ELGON Caldera, 3750 m alt. 1°9.35'N, 32°02'E. *Carex runssorensis* bog.
- 97148 KUMI District, BUKEDEA County, W of KACHUMBALA, 1215 m alt. 1°13.6'N, 34°06'E. Granite rock outcrop with xeric vegetation rich in succulents.
- 97149 TORORO District, TORORO Rock above TORORO town, 1320-1350 m alt. 0°46.5'N, 34°17.3'E. Steep limestone rock covered by dry forest and xeric bush with many succulents (tree *Euphorbia* and *Aloë tororoensis*).
- 97150 E edge of MBARARA District, 5 km W of LYANTONDE on the Masaka-Mbarara road, at 1285 m alt. 0°26'S, 31°6.06'E. *Acacia* savanna on stony hill slopes. Collection from *Albizia* trees.
- 97151 MBARARA District, 50 km ENE from MBARARA town, at 1300 m alt. 0°28.6'S, 31°0.5'E. Dry *Acacia* savanna on flat land. On *Acacia* trees.
- 97152 S edge of NTUNGAMO District near KABIRA village, 1870 m alt. 1°08.9'S, 30°07.6'E. Road cut in caoline soil among degraded pastures replacing former forests.
- 97154 KABALE District, NE edge of Lake BUNYONI near KYABAHINGA village, 6 km WSW from KABALE town, 2000 m alt. 1°16'S, 29°56.1'E. Rocky roadside and muddy lake shore.
- 97155 KABALE District, 4 km W from KABALE town, below KACHWEKANO village, 2040-2085 m alt. 1°15.1'S, 29°56.7'E. Roadside trees (*Ficus*, *Erythrina*) in KIYOORA Valley.
- 97156 E edge of KISORO District, at KANABA Gap. ICHUYA Forest Reserve, 2260-2300 m alt. 1°15.3'S, 29°47.6'E. Partly secondary montane forest with dominant *Macaranga*, *Neoboutonia* and *Acanthopale* (small tree sized Acanthaceae).
- 97157 KABALE District, ICHUYA Forest Reserve, 2265 m alt. 1°15'S, 29°48.4'E. A 0.2 x 1.5 km large peat bog dominated by Cyperaceae, the central part is covered by Ericaceae bush, where most bryophytes occur.
- 97158 KABALE District, ICHUYA Forest Reserve, 2260 m alt. 1°15.2'S, 29°48.1'E. Bamboo (*Sinarundinaria alpina*) forest rich in epiphytes, along the streamlet coming from the neighbouring peat bog.
- 97159 KABALE District, ICHUYA Forest Reserve, S of RWABU-RIMBE village, along the Kabale-Kisoro road above KANABA Gap, 2400-2440 m alt. 1°14.9'S, 29°48.3'E. 10-12 m tall bamboo (*Sinarundinaria alpina*) forest.
- 97160 KABALE District, ICHUYA Forest Reserve, near RWBU-RIMBA village on the ridge top, 2420 m alt. 1°14.5'S, 29°48.5'E. Bamboo – broadleaved mixed forest with dense *Asplenium friesiorum* undergrowth.
- 97161 KABALE District, near KAMUGONGO village, 2060 m alt. 1°10'S, 29°50.4'E. Shady roadcut under plantation forest.
- 97162 NTUNGAMO District. Along the Ruhanga-Kashasa road at NDIJA village, near "Pan Afric" Motel, 1450 m alt. 0°43.2'S, 30°22.6'E. Degraded swamp forest at valley bottom.
- 97163 MBARARA District, 35 km ENE of MBARARA town, 1340 m alt. 0°30.5'S, 30°49.5'E. *Acacia* savanna on flat land.

97164 MPIGI District, 58-60 km SW on the Kampala road near KYABADAAZA village, 1230 m alt. 0°5.5'N, 32°8.9'E. Swamp forest with giant *Spondias* and smaller *Sterculia* and *Phoenix reclinata* trees.

American species and variety.

\**Aphanolejeunea microscopica* (Tayl.) A. Evans var. *exigua* (A. Evans) A. Lücking et Pócs — 97141/T p.p. Afro-American species and variety.

\**Aphanolejeunea microscopica* (Tayl.) A. Evans var. *microscopica* 97142/AS. On half woody twigs of *Mimulopsis alpina*. Afro-American species and variety with penetration into atlantic Europe.

\**Aphanolejeunea moramangae* Tixier ex Pócs — 97107/AC. Epiphyllous. Lemurian species (tropical East Africa and Madagascar).

*Arachniopsis diacantha* (Mont.) Howe — 97141/B p.p., 97157/K. On earthy roadcut and on peaty soil. Afro-American species.

*Archilejeunea africana* Steph. — 97113/S. Epiphyllous. Widespread tropical African lowland species. Previously one record only (Lye & Pócs 1997).

\**Archilejeunea autoica* Vand. Bergh. — 97132/X. On bark. West African lowland species.

*Bazzania roccatii* Gola — 97143/B p.p., 97144/Q. Corticolous. Afroalpine species.

*Calypogeia afrocaerulea* E.W. Jones — 97141/C. On shady soil. Afromontane species related to (or identical with) the Neotropical *Calypogeia peruviana* Nees & Mont.

*Caudalejeunea yangambiensis* (Vand. Bergh.) E.W. Jones — 97112/U, 97124/L, 97164/E. Ramicolous, usually on tiny twigs, sometimes on thin trunks in very wet, often in swampy lowland type rain forests. Central African species from Cameroon to Rwanda.

*Cephalozia bicuspidata* (L.) Dum. — 97157/K p.p. On peaty soil. Widespread,

### Annotated enumeration of species

In the following enumeration an asterisk before the species name means that the record is new to Uganda based on the catalogue of Wigginton & Grolle (1996) and on the communications by Lye & Pócs (1997) and by Porley et al. (1999). The identifications are by T. Pócs. The enumeration of species contains only a smaller part of our gatherings. The collecting numbers follow the name, containing the locality number and a letter, marking the different species from the same locality. The indication of substrate is followed by remarks on the distribution or by other annotations.

*Acrolejeunea emergens* (Mitt.) Steph. — 97100/C, 97104/O, P and 97117/E. On bark of solitary, often planted trees. Widespread Afro-American species.

*Adelanthus decipiens* (Hook.) Mitt. — 97142/CG. Corticolous. Southern temperate species with penetration into tropical mountains and atlantic Europe (Gradstein et al. 1983).

*Anastrophyllum auritum* (Lehm.) Steph. — 97413/B p.p., 97143/E, 97144/A p.p. Corticolous in subalpine forest and bushes. Pantropical altimontane species.

*Aneura pseudopinguis* (Herz.) Pócs — 97132/AL. On wet rocks. Afro-American lowland species (Gradstein et al. 1983).

\**Aphanolejeunea microscopica* (Tayl.) A. Evans var. *africana* (Pócs) Pócs et & A. Lücking — 97142/BC. On twigs. Afro-

- montane in tropics.
- \**Ceratolejeunea jungneri* Steph. — 97107/AH. Epiphyllous. Tropical African lowland species.
- Chandonanthus hirtellus* (Web.) Mitt. ssp. *giganteus* (Steph.) Vand.Bergh. — 97142/AA. On bamboo stem. Afroalpine subspecies of a Palaeotropic species.
- Cheilejeunea intertexta* (Lindenb.) Steph. — 97107/E. On liana stem. Palaeotropic species.
- Cheilejeunea krakammae* (Lindenb.) Schust. 97142/BH. On ericaceous twigs. Widespread Afromontane species.
- Cheilejeunea surrepens* (Mitt.) E.W. Jones — 9107/AF, 97112/AE, 97113/Q, 97114/O, 97115/N. Epiphyllous or corticolous. Tropical African species.
- \**Cololejeunea auriculata* (E.W.Jones) Schust. — 97129/K. On shady streambed rocks, strongly appressed. Rare tropical African species.
- \**Cololejeunea bidentula* (Steph.) E.W. Jones — 97125/W. Epiphyllous. Rare East African species.
- Cololejeunea cuneifolia* Steph. — 9107/V, 97113/N. Epiphyllous. Tropical African species.
- Cololejeunea distalopapillata* (E.W.Jones) Schust. — 97108/R. Epiphyllous. East African – Madagascar species.
- Cololejeunea latilobula* (Herz.) Tixier — 97122/R, 97137/AD. Epiphyllous. Widespread Palaeotropic species.
- Cololejeunea minutissima* (Smith) Schiffn. — 97162/E. Ramicolous. Weedy Pantropical species with penetration into Atlantic Europe.
- \**Cololejeunea minutissima* (Smith) Schiffn. ssp. *myriocarpa* (Nees & Mont.) Schust. — 97137/AD, 97162/A. On twigs and trunks.
- \**Cololejeunea nigerica* (E.W. Jones) Schust. 9107/AE, 97112/AB, 97125/T. Epiphyllous. West African lowland species.
- Cololejeunea obliqua* (Nees et Mont.) Schiffn. — 97108/S, 97109/L, 97132/BD. Epiphyllous. Pantropical species.
- Cololejeunea obtusifolia* (E.W. Jones) Tixier — 97112/AF, 97113/R, 97122/Q. Epiphyllous. Widespread Tropical African species.
- Cololejeunea tonkinensis* Steph. 97108/Q. Epiphyllous. Widespread Paleotropic species.
- Colura calyptrifolia* (Hook.) Dum. — 97142/AL. Ramicolous, on half woody twigs of *Mimulopsis alpina*. Pantropical montane element with penetration into Atlantic Europe.
- Colura digitalis* (Mitt.) Steph. — 97107/Y. Epiphyllous. Widespread in tropical Africa, very rare in the Neotropics.
- \**Colura hedbergiana* Pócs — 97142/BG. On dead ericaceous twigs. Previously known only from Mt. Kilimanjaro in Tanzania, in very similar habitat!
- \**Colura kilimanjarica* Pócs & S. Jov.-Ast — 97142/AZ. On dead ericaceous twigs. Previously known only from Mt. Kilimanjaro in Tanzania, in very similar habitat!
- Colura tenuicornis* (A. Evans) Steph. — 97137/AF. Epiphyllous. Pantropical species.
- Cyathodium cavernarum* Kunze in Lehm. — 97131/B, 9737/K, 97138/J, 97142/A, 97158/K. On overhanging, dripping or

- sprayed rocks, or on temporarily inundated, muddy riverine forest floor. Widespread Pantropical species.
- Cylindrocolea ugandica* (E.W.Jones) Schust. — 97124/K, 97123/G. On decaying tree trunks or stumps. Rare Central (and West?) African species.
- \**Diplasiolejeunea cavifolia* Steph. — 9107/AA. Epiphyllous. Pantropical species.
- \**Diplasiolejeunea cornuta* Steph. — 97132/BA, 97142/BE. Ramicolous, on half woody twigs of *Mimulopsis alpina*. Afromontane species including the Indian Ocean islands.
- Diplasiolejeunea symoensii* Vand. Bergh. — 97137/AB. Epiphyllous. Tropical African species known from Rwanda to Tanzania.
- Dumortiera hirsuta* (Sw.) Nees — 97132/L, 97138/N & 97142/B. On streambed rocks or on wet soil under shady conditions. Oceanic subcosmopolite.
- Frullania arecae* (Spreng.) Gott. — 9742/BZ. On decaying twigs. Pantropical.
- Frullania diptera* (Lehm. & Lindenb.) Gott. — 97122/J, 97150/A. Corticolous. Tropical African species.
- Frullania obscurifolia* Mitt. — 97157/H, 97160/E. On bark and on twigs. Tropical African species.
- Frullania trinervis* (Lehm.) Drege 97151/E, 97162/D, 97163/A. Ramicolous, sometimes in surprisingly dry habitat, densely covering *Acacia* branches. Widespread tropical African species.
- \**Gongylanthus richardsii* E.W.Jones — 97144/AK. On ground. Afroalpine species, previously known from Mt. Cameroon, from Mt. Kilimanjaro and from the Rungwe Mts. in S Tanzania.
- \**Harpalejeunea fischeri* Tixier — 97141/T p.p., 97142/E, 97142/AM, BB, BX, 97142/W, 97142/BX. Ramicolous, on half woody twigs of *Mimulopsis alpina*, rarely on bamboo stem and on bark of other trees or epiphyllous. It was recently described, as a result of the BRYOTROP expedition, from Mt. Karisimbi in Rwanda, at 3100 m alt. as epiphyll (Tixier 1995). It seems to be rather common around Sasa River Camp along the W approach of Mt. Elgon, between 2630 and 2945 m alt. At the first sight the plantlet seems to be a *Microlejeunea* with acute leaves (there is no such plant in tropical Africa), but usually 2 ocelli form a short vitta parallel to the free lobule margin.
- Jungermannia sphaerocarpa* Hook. — 97142/E. On stones and pebbles in the running stream water. Northern temperate species, montane in the tropics.
- Lejeunea caespitosa* Lindenb. — 97132/AZ. On canopy branches. Widespread Afro-American species.
- \**Lejeunea* (Pleurolejeunea) *okomuensis* E.W. Jones. — 97125/V. Epiphyllous. Rare West African species.
- Lejeunea tabularis* (Spreng.) Gott. 97141/L. On bark. Widespread Afromontane – South African species.
- Lepidozia* (Spruce) *succida* Mitt. — 97103/A, 97105/S, 97106/A, 97107/C, 97108/D, 97109/F. Terricolous, especially on red ferralitic soils. A West African species reaching its easternmost occurrence in continental Africa on the Sese and Kome Islands, where it is fairly common.
- Lepidozia stuhlmannii* Steph. ssp. *stuhlmannii* — 97142/CW, 97143/D, 97143/L. Corticolous. Afromontane species.
- Leptolejeunea astroidea* (Mitt.) Steph. — 9107/



- X, 97108/O, 7125/U. Epiphyllous. Widespread in West Africa eastwards to Zaire, with sporadic occurrence in Zimbabwe.
- \**Leptolejeunea epiphylla* (Mitt.) Steph. — 97108/M. Epiphyllous. Paleotropical species.
- Leptolejeunea maculata* (Mitt.) Schiffn. 9107/W. Epiphyllous. Pantropical species.
- Leucolejeunea xanthocarpa* (Lehm. & Lindenb.) A.Evans — 97132/AX, 97142/BO. On canopy branches or on bamboo stems. Pantropical.
- Lophocolea bidentata* (L.) Dum. — 97141/Y, 97142/L. On bark. Widespread.
- Lophocolea concreta* Mont. — 97142/B. On streambed rocks. Widespread in tropical Africa.
- Lophocolea muricata* (Lehm.) Nees — 97141/V, 97142/BA. On bark and on bamboo stem. Pantropical.
- Lunularia cruciata* (L.) Dum. — 97140/C, 97142/F. On half open cliff or on streambed rocks. Oceanic subcosmopolite. It seems to be indigenous and widespread on the volcanoes of East Africa.
- Marchantia debilis* Goebel — 97132/G. Widespread tropical African species.
- Metzgeria agnewii* Kuwah. — 97144/AR, 97147/Q. On Ericaceae bark. Described from East Africa, but according to Kuwahara (1986) a Andean – Afro-montane species.
- \**Metzgeria attenuata* Steph. — 97156/Q. On bamboo stem and on twigs of other shrubs. Afro-American species.
- Metzgeria hedbergii* Vand. Bergh. — 97143/F. Corticolous. Rare Afroalpine species known only from Ruwenzori, Muhavura, Elgon and Mt. Kenya.
- Metzgeria limbato-setosa* Steph. 97164/B. Ramicolous. Widespread montane species in East and in southern Africa..
- Microlejeunea africana* Steph. 97107/AB, 97162/J, 97164/R. Epiphyllous and corticolous. Widespread in tropical and in southern Africa.
- Odontolejeunea lunulata* (Web.) Schiffn. 97132/B. Epiphyllous. Widespread tropical Afro-American species.
- Plagiochasma rupestre* (Forst.) Steph. 97138/A, 97140/F. On volcanic cliffs. Xerophytic subcosmopolite.
- \**Plagiochila boryana* Gott. ex Steph. — 97142/CT. On litter covered ground. Lemurian species known in continental Africa only from Mt. Kilimanjaro, in the Indian Ocean islands from the Comoros, Madagascar, Réunion and Mauritius. Its presence on Mt. Elgon might have a great phytogeographical significance.
- \**Plagiochila exigua* (Tayl.) Tayl. (Syn.: *Plagiochila corniculata* auct.) — 97142/AG. On twigs. A worldwide disjunct oceanic element, in tropical Africa known from Kahuzi-Biega in Zaire, Taita Hills in Kenya, from Mt. Meru and Mt. Kilimanjaro in Tanzania and from the Bale Mountains in Ethiopia (Pócs 1993, 1994).
- \**Plagiochila neckeroidea* Mitt. — 97112/M. West African species, with its previously easternmost known locality in Zaire.
- Plagiochila pinniflora* Steph. 97132/P. Typical canopy epiphyte from the upper branches of a fallen tree. West African species, only one record is previously known from Uganda. (Budongo Forest, Jones 1962).

*Radula flaccida* Lindenb. & Gott. — 97106/E, 9107/Z, 97108/N, 97109/H, 97113/L, 97122/S, 97132/BE, 97164/G. Epiphyllous. Common Afro-American element of lowland rain forests (see map in Gradstein et al. 1983).

*Schiffneriolejeunea fragilis* Gradst. & E.W.Jones — 97132/AQ. From the upper branches of a fallen tree. West African canopy epiphyte with its known easternmost locality in Zaire.

*Schiffneriolejeunea polycarpa* (Nees) Gradst. 97115/AK. Corticolous. Pantropical species.

\**Targionia lorbeeriana* K.Muell. — 97144/N (Mt. Elgon). Terricolous, on humus covered lava rocks at 3450 m alt. A Mediterranean European species rarely found in the East African mountains (only Mt. Kilimanjaro and from the Chuyulu Mts. in Kenya) and in South Africa (see map in Bizot et al. 1979).

*Telaranea nematodes* (Mont.) Howe — 97105/T, 97107/D, 97112/Q, 97141/B, 97158/K. Terricolous or on litter, often intermixed with other tiny liverworts. Southern temperate Afro-American species penetrating into the tropical mountains and atlantic Europe (see map in Gradstein et al. 1983).

\**Telaranea trifida* (Steph.) Schust. — 97157/A. On peaty soil, together with *Arachniopsis diacantha*. Afromontane peat bog species known only from Cameroon, Rwanda and eastern Zaire.

*Tetralophozia cavallii* (Gola) Vána — 97144/A. On bark of *Rapanea* tree. Afroalpine species, see map in Pócs (1994). New to Mt. Elgon.

*Tritomaria exsecta* (Schmidel ex Schrad.) Schiffner ex Loeske. — 97142/CV. On decaying wood. Northern temperate species occurring in Afroalpine habitats from Ethiopia to Rwanda.

### Phytogeographical considerations

The above list contains 3 species, *Colura hedbergiana*, *Colura kilimanjarica* and *Harpalejeunea fischeri*, which were known only from their type localities, the first two from Mt. Kilimanjaro in Tanzania, the last one, the only representative of the genus *Harpalejeunea* in continental Africa, from Mt. Karisimbi in Rwanda. They can no longer be considered endemics of the concerned mountains. *Colura kilimanjarica* is of special importance according to Jovet-Ast (1980). It belongs to the Section *Oidocorys*, which probably spread before the dissection of Gondwanaland, evolving different species in its dissected parts.

It is interesting from the point of view of the transitional phytogeographic position of Uganda, that a number of West and Central African geographic elements reach their easternmost limit of distribution here (mostly in western Uganda), like *Archilejeunea autoica*, *Caudalejeunea yangambiensis*, *Cololejeunea nigerica*, *Lejeunea okomuensis*, *Lepidozia succida* (also in Madagascar), *Leptolejeunea astroidea* (also in Zimbabwe), *Plagiochila pinniflora* and *Schiffneriolejeunea fragilis*; while on the other hand several East African species, like *Cololejeunea bidentula*, the above mentioned two *Colura* species, and the Lemurian *Plagiochila boryana* are at their westernmost limit in Uganda, most of them on Mt. Elgon.

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