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AUTHOR Kati Pihlaja, Sanna Huttunen, Annika Metso, Timo Kypärä, Kimmo Syrjänen, Riikka Juutinen, Inka Kuusisto, Ari Parnela, Harri Arkkio, Tuomo Kuitunen, Risto Virtanen, Teppo Häyhä, Teemu Tahvanainen, Timo Koponen, Margarita A. Boychuk, Ari-Pekka Huhta, Sanna Laaka-Lindberg, Outi Vainio, Jyrki Torniainen, Annikki Kestilä, Johannes Enroth, Ville Vesakoski, Tiina H. M. Kolari, Viivi Lindholm, Ella Romppanen, Sari Metsänoja, Esa Ervasti, Turkka Korvenpää, Liisa Maanpää, Lorenzo Veglio, Pirita Oksanen, Xiaolan He & Tauno Ulvinen

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New national and regional biological records for Finland 11.

Contributions to Bryophyta and Marchantiophyta 10

Kati Pihlaja, Sanna Huttunen, Annika Metso, Timo Kypärä, Kimmo Syrjänen, Riikka Juutinen, Inka Kuusisto, Ari Parnela, Harri Arkkio, Tuomo Kuitunen, Risto Virtanen, Teppo Häyhä, Teemu Tahvanainen, Timo Koponen, Margarita A. Boychuk, Ari-Pekka Huhta, Sanna Laaka-Lindberg, Outi Vainio, Jyrki Torniainen, Annikki Kestilä, Johannes Enroth, Ville Vesakoski, Tiina H. M. Kolari, Viivi Lindholm, Ella Romppanen, Sari Metsänoja, Esa Ervasti, Turkka Korvenpää, Liisa Maanpää, Lorenzo Veglio, Pirita Oksanen, Xiaolan He & Tauno Ulvinen

Pihlaja, K. (kmpihl@utu.fi), **Huttunen, S., Metso, A., Kuusisto, I. & Maanpää, L.**, Botanical Museum, Biodiversity Unit, FI-20014 University of Turku.

Virtanen, R., Huhta, A-P., Kestilä, A. & Ulvinen, T., Botanical Museum, Biodiversity Unit, FI-90014 University of Oulu.

Kypärä, T., FI-41900 Petäjävesi. **Syrjänen, K.**, Finnish Environment Institute, FI-00790 Helsinki. **Juutinen, R.**, Centre for Economic Development, Transport and the Environment, FI-96101 Rovaniemi. **Parnela, A.**, FI-35300 Orivesi. **Arkkio, H.**, FI-37800 Akaa. **Kuitunen, T.**, FI-40420, Jyskä. **Häyhä, T.**, Pihtipudas, Finland.

Tahvanainen, T., Vesakoski, V., Kolari, T. H. M. & Romppanen, E., Department of Environmental and Biological Sciences, University of Eastern Finland, FI-80101 Joensuu.

Koponen, T., Laaka-Lindberg, S., Enroth, J., Veglio, L. & He, X., Botany Unit, Finnish Museum of Natural History, FI-00014 University of Helsinki.

Boychuk, M.A., Institute of Biology, Karelian Research Centre of RAS, 185910 Petrozavodsk, Russia. **Vainio, O.** Kuopio Natural History Museum, FI-70100 Kuopio. **Torniainen, J.**, Open Science Centre, FI-40014 University of Jyväskylä. **Lindholm, V.**, Faculty of Biological and Environmental Sciences, FI-00014 University of Helsinki. **Metsänoja, S.**, 31300 FI-Tammela.

Ervasti, E., FI-10330 Pinjainen. **Korvenpää, T.**, FI-21420 Lieto. **Oksanen, P.**, Centre for Economic Development, Transport and the Environment, FI-50101 Mikkeli.

Ten species of mosses (Bryophyta: *Entosthodon obtusus*, *Entosthodon ulvinenii*, *Eurhynchiastrum diversifolium*, *Hedwigia emodica*, *Hedwigia mollis*, *Hygrohypnum styriacum*, *Plagiothecium ros-sicum*, *Polytrichum perigoniale*, *Tortella alpicola* and *Ulota intermedia*) are presented as new for Finland. *Cephalozia lacinulata*, previously considered to be regionally extinct from Finland, is reported to being found again. New records in biogeographical provinces for 67 species of mosses and 34 species of liverworts are listed. Finally, 6 occurrences in provinces are removed due to misidentifications or missing specimens.

Introduction

Even though the Finnish bryophyte flora is quite well known due to the long history of bryological research in Finland, new species for the coun-

try are encountered annually, as well as new records in biogeographical provinces that change our view of species distributions. New national

and regional records of bryophyte taxa have been published regularly since 2010. By publishing the new records and updated regional distribution tables the Finnish Bryophyte Expert Group hopes to encourage professional and non-professional bryologists to gather new information and deliver collected specimens to public herbaria. This serves to improve our knowledge of the Finnish bryophyte flora. It also provides the basis and background data for updating the Finnish bryophyte checklist (Pihlaja et al. 2023), distribution tables (Pihlaja & Ulvinen 2023) and national Red List assessments (Juutinen et al. 2019).

We have published the new national and regional records at intervals of one or a few years.

This publication is the tenth in line after the year 2010 (Ulvinen & Syrjänen 2010, 2011, Ulvinen et al. 2012, Juutinen et al. 2013, Juutinen & Ulvinen 2014, Juutinen et al. 2015, Juutinen et al. 2016, Juutinen et al. 2018, Pihlaja et al. 2022). Compiling the data on new observations manually from bryologists doing fieldwork, among records of incoming herbarium specimens and various observation databases is laborious. Since 2021 the new national and regional records updates have been filtered from the whole content of the Finnish Biodiversity Information Facility (FinBIF, laji.fi/en) using a computer script published in Pihlaja et al. (2022). FinBIF gathers data from several different sources, including the Collection Management System Kotka of Finnish herbaria, the species information system LajiGIS for environmental administration and other data sources such as citizen science observations, project datasets etc. The automated data filtering has improved data collection significantly and reduced the amount of work in compiling the new records. But, due to substantial number of new records and uncertainties and obvious errors in the specimen data and observations obtained, it has shifted the work from compiling new records to data quality checking. This hopefully saves time in future Red List evaluations. Here we continue to use the automatized data collecting for compiling the distribution tables and the records and report the new national and regional records that have been made after January 2021.

Materials and Methods

The new records reported here are based on fieldwork, the examination of herbarium collections and cross-checking the digitized specimen data in FinBIF database against records on species distribution at biogeographical regions. Researchers, nature surveyors and bryophyte enthusiasts were also encouraged to inform Kati Pihlaja or Tauno Ulvinen about the new national or regional records and to deposit the collected specimens as vouchers to any Finnish herbarium.

The automated filtering of new records was based on a scripted cross-checking of the known distribution of each bryophyte taxa in biogeographical provinces recorded in the FinBIF database against the whole content of bryophyte specimen records in the FinBIF. Distribution data in the FinBIF is based on the published records on the distribution of Finnish bryophytes (Pihlaja & Ulvinen 2021). In recent years, the digitization of the herbarium specimens into the Collection Management System Kotka of Finnish herbaria, and through that to FinBIF, has proceeded greatly. Besides recently made observations, new bryophyte records in FinBIF also included old specimens that have thus far remained undigitized. A detailed explanation of the automated filtering method is presented in Pihlaja et al. (2022). The cross-check was performed with data obtained from FinBIF on 2nd of February 2023. The Python script used for cross-checking is available on Zenodo (Hopkins 2021).

Because of frequent misidentifications, both in the reported observations and in the herbarium specimens, all the new records obtained both from FinBIF and directly from collectors were assessed by bryophyte experts before they were accepted. Kati Pihlaja coordinated this work, and she has compiled all the records. This article includes only the information on new species for Finland and the new occurrences for the biogeographical provinces, while other changes, such as the new finds of species that have been observed in Finland only before the year 1940, will be published in the latest distribution tables of all Finnish bryophytes in biogeographical provinces (Pihlaja & Ulvinen 2023).

We have only accepted records based on public herbarium specimens. Observations based on

field determinations or specimens in private herbaria cannot be confirmed and we regard them as uncertain. The main source of information now and in the future are labelled, dried herbarium specimens, which provide an invaluable archive for scientific research in biogeography, ecology, and taxonomy. Because of missing specimens, some interesting and valuable bryophyte observations, including e.g., *Acaulon muticum* in Regio aboënsis (LajiGIS database 18.5.2023), *Conocephalum salebrosum* in Savonia australis (LajiGIS database 18.5.2023), *Crossocalyx hellerianus* in Karelia ladogensis (Syrjänen et al. 2004) and *Grimmia alpestris* in Regio kuusamoënsis (Juutinen et al. 2017) were not accepted. These will be added later if the specimens are deposited in public herbaria.

Most of the data in specimen labels is originally given in Finnish and translated into English here. The locality information may have been expanded to add clarity. The original specimen data as recorded in the Collection Management System Kotka can be found following the link at the end of each specimen description. For *Cephalozia*, *Fuscocephaloziopsis*, *Cephaloziella* and *Nardia* double-blind determination was mostly required due to the large proportion of misidentifications in herbarium specimens (Ryömä et al. 2013).

The nomenclature follows the European checklist for bryophytes (Hodgetts et al. 2020). After the publication of the European checklist, there has been some significant taxonomical progress in certain genera. Hedenäs (2020) has disentangled the *Meesia uliginosa* complex, which might later add *Meesia minor* Brid. and *Meesia minutissima* Hedenäs to the Finnish checklist. Among *Blepharostoma*, Bakalin et al. (2022) have detected *Blepharostoma primum* Vilnet & Bakalin occurring in Finland. Recently, Long et al. (2023) have shown that *Aneura pinguis* complex might include up to nine cryptic species in Europe. This might change the number of species in the genus and lead to redefining the species concepts of *Aneura pinguis* and *Aneura maxima* also in Finland. All these new candidates require further studies and re-examinations of herbarium specimens before accepting them to the Finnish checklist.

Abbreviations for herbaria follow the Index Herbariorum (Thiers 2018): H = Botanical Museum, Finnish Museum of Natural History, University of Helsinki, JYV = Natural History Collections of Jyväskylä University Open Science Centre, KUO = Kuopio Natural History Museum, OULU = Botanical Museum, University of Oulu, TUR = Herbarium, University of Turku.

Several people have made new records in the field and others have confirmed determinations. Tauno Ulvinen and Risto Virtanen have confirmed the identifications of most of the new voucher specimens in OULU. Sanna Huttunen has confirmed identifications of *Sciuro-hypnum tromsoense* (Kaurin & Arnell) Draper & Hedenäs and Kimmo Syrjänen the identifications of *Eurhynchiastrum diversifolium* (Schimp.) J.Guerra. Lorenzo Veglio has re-identified old specimens of former *Sphagnum magellanicum* Brid. in H. Xiaolan He has checked the identifications of *Cephalozia lacunculata* (J.B.Jack ex Gottsche & Rabenh.) Spruce. Riikka Juutinen, Inka Kuusisto and Timo Kypärä performed double-blind determinations for *Cephalozia*, *Fuscocephaloziopsis*, *Cephaloziella* and *Nardia* specimens.

Personnel at herbaria, Ari-Pekka Huhta (OULU), Anu Käppi (JYV), Sanna Laaka-Lindberg (H), Jyrki Tornainen (JYV) and Outi Vainio (KUO) helped to locate specimens for checking and digitizing.

Results and discussion

We present 140 new records of bryophyte taxa for Finland and its biogeographical provinces that have come to our attention after our last article in 2022. 99 of these new national or regional records are mosses and 41 are liverworts.

Ten species are presented as new for Finland and one possibly regionally extinct species is reported to being found again. *Entosthodon ulvinenii* spec.nov. was described as new to science by Timo Koponen, along with finding *Entosthodon obtusus* (Hedw.) Lindb. as new for Finland (Koponen 2021). *Eurhynchiastrum diversifolium* (Schimp.) J.Guerra, *Hygrohypnum styriacum* (Limpr.) Broth. and *Tortella alpicola* Dixon were found as new for Finland by Kimmo Syrjänen. *Hedwigia mollis* Ignatova, Ignatov & Fe-

dosov and *Plagiothecium rossicum* Ignatov & Ignatova were reported as new for Finland by Margarita Boychuk & Gergely Várkonyi (2022).

The recently published European checklist (Hodgetts et al. 2020) adds three new species to the Finnish checklist. These additions were not notified in our latest article (Pihlaja et al. 2022) because of unconfirmed species identifications. The additions are based on taxonomic changes which elevate taxa from intraspecific to species rank. These include *Hedwigia emodica* Hampe ex Müll.Hal., *Polytrichum perigoniale* Michx. and *Ulota intermedia* Schimp. All these taxa had earlier published observations from Finland at the intraspecific level (Brotherus 1923, Nyholm 1968).

In addition, we present six corrections for old regional records. These are mainly corrections of misidentifications or absent specimens. The updated tables of regional distribution of all Finnish bryophytes can be found from the Internet (https://www.syke.fi/fi-FI/Tutkimus_kehittaminen/Luonto/Eliotyoryhmat/Sammalyoryhma/Suomen_sammalet).

The computer script for searching the FinBIF database for new species occurrences in Finland and its biogeographical provinces resulted in 305 flagged records. However, less than half of these were confirmed as true new species occurrences in Finnish biogeographical provinces. The main reasons for excluding the records were uncertain species identifications, incorrect information in Kotka and observations in LajiGIS database that lack herbarium specimens. Certain species had major taxonomic uncertainties that need to be resolved before the identifications can be confirmed (e.g., *Moerckia hibernica* s.lat. and *Philonotis tomentella*). Some of the rejected records have been annotated in FinBIF database to explain the reasons for rejection.

As the speedy automated data gathering has replaced the previous, slow method of manual browsing through herbaria collections, field reports and other miscellaneous sources, we have been able to shift our focus on data reliability. The specimen quality checking includes, for example, correct taxonomic identification, accurate interpretation of old nomenclature, interpretation of the label data and georeferencing.

This process has also highlighted the fact that the databased information in FinBIF is riddled with many uncertainties and obvious errors

in the specimen and observation data. Thus while the large scale databasing of old herbarium specimens and automated data gathering increases the amount of information available, the data reliability does not increase correspondingly. The fact that over half of the new occurrences in biological provinces flagged by automated data gathering were rejected as unreliable underlines the importance of investing in skilled herbarium staff and the training of taxonomists. Also, the databasing practises require uniform standards and instructions in all herbaria.

The amount of new regional records is greater than in our previous update (Pihlaja et al. 2022). This is mainly due to high activity in field inventories during recent years. A sizable proportion of new regional records are made by Timo Kypärä, who has conducted field inventories on threatened bryophytes for Metsähallitus Parks and Wildlife Finland mostly with funding from Helmi Habitats Programme. Ari Parnela and Harri Arkkio have made a significant effort in volunteer-based field research on rapids and streams in the Pirkanmaa region. The Ministry of Environment has also funded a research programme for deficiently known species and habitats (PUTTE2) in 2021–2022 which resulted in two important research projects in terms of bryology: one concerning oroarctic snowbed vegetation (led by Sanna Huttunen, the University of Turku) and the other eutrophic fens (led by Teemu Tahvanainen, the University of Eastern Finland). The Finnish Environment Institute has also conducted a national research project on eutrophic fens during the years 2020–2024.

New records – Bryophyta

Aloina brevirostris (Hook. & Grev.) Kindb.

FINLAND. Kainuu (Ok/Kn), Puolanka, Väyrylä, Iso Vuorijärvi. E of lake Iso Vuorijärvi near shore. W-facing steep forested slope with calcareous rock outcrops. On the upper edge of the slope, at the top of a low rock wall, on bare soil. Sparsely in 2 dm² area. Coll. Timo Kypärä 4217, 30.IX.2022 (OULU <http://tun.fi/GAT.2302>); Lapponia kitilensis (Lkk/KiL), Kolari, Äkäsjokisuu, Kalkkikangas. Calcareous heath forest. Roadside of abolished mining area. On mineral soil. Probably sparsely in a few m² area. Coll. Timo Kypärä 3694, 29.VII.2021 (OULU <http://tun.fi/GAT.1778>).

Andreaea blyttii Schimp.

FINLAND. Lapponia sompiensis (Lks/SoL), Sodankylä, Urho Kekkonen National Park, Lokan Alen Muurivaara. On rock. Rocky terrain in oligotrophic bryophyte-rich snowbed. Ravine in NE-facing fell slope. Coll. Inka Kuusisto 4.VII.2022 (TUR <http://mus.utu.fi/TBR.127465>).

Blindiadelpus campylopodus

(Kindb.) Fedosov & Ignatov

FINLAND. Tavastia australis (Ta/EH), Heinola. W slope of Mäyrämäki, margin of mire Isosuo. On rock. Moist calcareous wall. 2 dm² patch. Coll. Timo Kypärä 3488, 5.V.2021 (OULU <http://tun.fi/GAT.1572>); Lapponia kittilensis (Lkk/KiL), Kittilä, Aakenusjoki, Niritsanvuoma, Rautanaula. By the river Aakenusjoki next to Rautanaula. On boulder. Scarce, few shoots in 1 cm² area. Coll. Timo Kypärä 3649, 22.VII.2021 (OULU <http://tun.fi/GAT.1733>).

Blindiadelpus diversifolius

(Lindb.) Fedosov & Ignatov

FINLAND. Regio aboënsis (Ab/V), Vihti, Vanjärvi, Märjäntienmäki. N part of the W slope of hill Märjäntienmäki. Readily weathering horizontal vein (3 m long and 20 cm wide) in the rock wall. Small patches along 1 m, altogether 20 cm². Coll. Timo Kypärä 3437, 20.IV.2021 (OULU <http://tun.fi/GAT.1521>); Tavastia australis (Ta/EH), Heinola, Mäyrämäki, Isosuo. W slope of Mäyrämäki, on the edge of Isosuo. On rock. Underhanging rough calcareous rock wall. Scattered over 1m². Coll. Timo Kypärä 3484, 5.V.2021 (OULU <http://tun.fi/GAT.1568>).

Buxbaumia viridis

(Moug. ex Lam. & DC.) Brid. ex Moug. & Nestl.

FINLAND. Ostrobotnia media (Om/KP), Kokkola, Rimmi, Perhonjoki (Vetelinjoki), W part of island Isoaari by a hiking route. An old stump between herb-rich and heath forest. Scarce, sterile, a few cm² coverage of gemmae, no sporophytes. Coll. Timo Kypärä 4199, 20.IX.2022 (OULU <http://tun.fi/GAT.2284>); Regio kuusamoënsis (Ks), Posio, Riisitunturi National Park, W of Riisitunturi at mire Joutilassuo. On rotten wood, a brookside stump. Sterile, 1 dm² patch of gemmae, no sporophytes. Coll. Timo Kypärä 3749, 14.VIII.2021 (OULU <http://tun.fi/GAT.1833>); Lapponia kittilensis (Lkk/KiL), Muonio, in a ravine between Lainiotunturi and Pyhätunturi, E of Kolmentunturinjänkkä. On rotten wood (diam. 23 cm) in a spring complex. Gemmae commonly on fallen tree along 1 m, no sporophytes. Coll. Timo Kypärä 4036, 2.VII.2022 (OULU <http://id.herb.oulu.fi/GAL.17547>).

Coscinodon cribrus (Hedw.) Spruce

FINLAND. Tavastia borealis (Tb/PH), Rautalampi, Southern Konnevesi National Park. Downstream of rapids Konnekoski, N shore of the rapids. On a weathering SW-facing shore cliff. Small tufts in ¼ m² area. Coll. Timo Kypärä 3993, 8.VI.2022 (OULU <http://id.herb.oulu.fi/GAL.17538>).

Dichelyma capillaceum (L. ex Dicks.) Myrin

FINLAND. Satakunta (St), Parkano, river Koskelanjoki, rapids Kuorekoski. On the side of a fairly big stone on the shore. A few dm² coverage. Coll. Harri Arkkio 1472 & Ari Parnela, 31.VII.2021 (OULU <http://id.herb.oulu.fi/GAL.13309>).

Dicranella rufescens (Dicks.) Schimp.

FINLAND. Satakunta (St), Parkano, Latosuonperä, near Rengassalo nature protection area, rapids at Ritaoja. At the base of a brook bank. On bare fine sand/mud. Coll. Harri Arkkio & Ari Parnela 31.VII.2021, conf. Tauno Ulvinen 2022 (OULU <http://id.herb.oulu.fi/GAL.11588>).

Dicranum acutifolium (Lindb. & Arnell) C.E.O.Jensen

FINLAND. Karelia borealis (Kb/PK), Kuopio, Juankoski, Ala-Siikajärvi, E side of the middle part of island Kakkosaari. On moist low rock wall. 2dm² patch. Coll. Timo Kypärä 3601, 21.VI.2021 (OULU <http://tun.fi/GAT.1685>).

Dicranum leioneuron Kindb.

FINLAND. Karelia borealis (Kb/PK), Eno, Enontaipale, Niskavesi. Coll. Edvard A. Vainio 1875, det. Johannes Enroth 2017 (H <http://id.luomus.fi/HA.H4048887>).

Discelium nudum (Dicks.) Brid.

FINLAND. Karelia ladogensis (KI/LK), Parikkala, Huhmarinen, Siikalahti. On the edge of clay field. Red male shoots fairly abundant. Other shoots not found. Coll. Tuomo Kuitunen 4455, 13.VII.2022 (OULU <http://id.herb.oulu.fi/GAL.17719>).

Ditrichum lineare (Sw.) Lindb.

FINLAND. Lapponia kittilensis (Lkk/KiL), Muonio, Palas-Yllästunturi National Park, Vatikuru. On bare soil. In the margins of scree. Coll. Sanna Huttunen 1.VII.2021 (TUR <http://mus.utu.fi/TBR.127377>); Lapponia inarensis (Li/InL), Inari, Saariselkä, NE slope of Kiilopää, along hiking trail to Luulammit. Upper part of gorge, grass-sedge-dominated snowbed, on bare stony soil. Coll. Sanna Huttunen 12.VII.2022 (TUR <http://mus.utu.fi/TBR.127725>).

Drepanocladus trifarius (F.Weber & D.Mohr) Broth.

FINLAND. Savonia australis (Sa/ES), Mikkeli, Suomeniemi, Kuusenhako. Ditched fen N of Myllylampi, E of Haukkaaja. Nearly pristine eutrophic flark fen and pine fen. Single shoots among other bryophytes. Coll. Pirita Oksanen 15.IX.2021, conf. Kati Pihlaja 2022 (TUR <http://mus.utu.fi/TBR.128555>).

Encalypta mutica I.Hagen

FINLAND. Karelia borealis (Kb/PK), Kuopio, Juankoski, Likolahti. N part of Huosiaisniemi, E shore. On mineral soil, on a rock wall shelf. Observations over 20 cm² area. Plenty of suitable habitat at the site. Coll. Timo Kypärä 3588, 16.VI.2021 (OULU <http://tun.fi/GAT.1672>).

Entosthodon obtusus (Hedw.) Lindb.

ojapiennarsammal, hedkoppmossa

FINLAND. Ostrobothnia ultima (Obu/PeP), Rovaniemi, Pisavaara Strict Nature Reserve, near the home of the reserve guard. On sandy, shady ditch bank with trickling water. Coll. Timo Koponen 7588a & Aune Koponen 30.VII.1965, det. Timo Koponen 2021 (H <http://id.luomus.fi/HA.H4261294>).

New species for Finland. *Entosthodon obtusus* was found by Timo Koponen in connection with field inventories in Pisavaara Strict Nature Reserve in 1964–1966 (Koponen 2021, Koponen & Ulvinen 2021). *Entosthodon obtusus* grows on moist sandy soil together with *E. ulvinenii* spec. nov. According to Lönnell (2006), *E. obtusus* prefers bare, moist, humus-rich or peaty soil with low pH and small-scale disturbances. It occurs in oceanic parts of Sweden, Norway, Denmark, Faroe Islands and Iceland but is rare in all Nordic countries. Its' distribution covers western parts of Europe and North Africa. *Entosthodon obtusus* differs from other *Entosthodon* species by having a bluntly dentate or almost smooth leaf margin with distinct yellowish border formed of 1–3 rows of narrow cells (Lönnell 2006).

Entosthodon ulvinenii T.J. Kop.

taunonpiennarsammal, långskaftad koppmossa

FINLAND. Ostrobothnia ultima (Obu/PeP), Rovaniemi, Pisavaara Strict Nature Reserve, near the home of the reserve guard. On sandy, shady ditch bank with trickling water. Coll. Timo Koponen 7588b & Aune Koponen 30.VII.1965, det. Timo Koponen 2021 (H <http://id.luomus.fi/HA.H4261293>, type specimen).

New species for science and Finland. *Entosthodon ulvinenii* was described as new to science by Koponen (2021) based on a single occurrence from Rovaniemi. It was found by Timo Koponen in connection with field inventories in Pisavaara Strict Nature Reserve in 1964–1966 (Koponen & Ulvinen 2021). The species differs from the other species of *Entosthodon* by having lanceolate leaves, recurved leaf margins lacking limbidia, and long and narrow laminal cells.

Eurhynchiastrum diversifolium (Schimp.) J.Guerra

lieronokkasammal, fjällsprötmossa

FINLAND. Koillismaa (Ks). Salla, Takkaselkänturrit. NE slope of fell. Shady NE facing meso-eutro cliffs above forest line. On cliff. Coll. Sanna Huttunen 29.VII.2016, det.

Kimmo Syrjänen 2021 (TUR <http://mus.utu.fi/TBR.120917>); Lapponia enontekiensis (Le/EnL), Enontekiö, Etu-Halti. SW foot of Häldečahka, N slope of Biggosjävri. At the base of a siliceous cliff. Scarce, in the upper slope, on nutrient-rich soil in a crevice of siliceous rock, among *Distichium capillaceum*. Coll. Kimmo Syrjänen 22.VII.2020 (TUR <http://mus.utu.fi/TBR.126731>); Lapponia inarensis (Li/InL), Utsjoki, S valley of Kevojoki, the banks of Kevon seinä -canyon wall. Coll. Unto Laine 13.VII.1959, det. Kimmo Syrjänen 2021 (TUR <http://mus.utu.fi/TBR.40271>).

New species for Finland. *Eurhynchiastrum diversifolium* (Schimp.) J.Guerra was recently described by Mr. Juan Guerra Montes from the Iberian Peninsula (2016). He showed that *Eurhynchiastrum pulchellum* var. *diversifolium* (Schimp.) Ochyra & Żarnowiec is morphologically distinct from *Eurhynchiastrum pulchellum* sensu lato and is worth of species rank. *E. diversifolium* is characterized by closely imbricate to julaceous branch leaves with rounded or obtuse apex, whereas the branch leaves of *E. pulchellum* are erect to spreading and leaf apex is short and gradually acuminate or acute (Guerra 2016). Under microscope upper and midlaminal cells of *E. diversifolium* are only (30–)45–50(–55) µm long, while in *E. pulchellum* these cells are usually clearly longer: (55–)60–90 µm long (Guerra 2016). A quick survey of potential *E. diversifolium* in Turku University Herbarium among specimens of *Eurhynchiastrum pulchellum* s.lat. easily revealed several good candidates of *E. diversifolium* based on gross morphology. All Finnish herbarium specimens of *Eurhynchiastrum pulchellum* have not been yet examined but this work should be done. According to present observation *Eurhynchiastrum diversifolium* seems to be mainly arctic-alpine species in Finland. Most Finnish observations are from alpine calcareous fell districts of Lapponia enontekiensis in the northern part of the Scandinavian mountains. This taxon is so far not published to be in other parts of Scandinavia, but according to Kristian Hassel (pers. comm.) some specimens with confirmed identification exist from Norwegian mountains as well. Guerra (2016) also considers *E. diversifolium* to be a high alpine taxon in most parts of its range and *E. pulchellum* to be more concentrated in lowlands in all other areas than polar (Antarctic and Arctic) regions. This is partly true in Finland but scattered occurrences of *E. pulchellum* s.str. are also met in arctic-alpine areas in the northern part of the country.

Fissidens exilis Hedw.

FINLAND. Karelia ladogensis (KI/LK), Parikkala, Huhmarinen, Siikalahahti. On clay by a path. Fairly scarce. Coll. Tuomo Kuitunen 4449, 13.VII.2022, det. Ari Parnela 2022 (OULU <http://id.herb.oulu.fi/GAL.17717>)

Grimmia montana Bruch & Schimp.

FINLAND. Nylandia (N/U), Lohja, Lieviö, Sikamäki. SW slope of Sikamäki near municipal border. On rock in a vertical crevice of rock wall. ½ dm² patch. Coll. Timo Kypärä 3857, 10.IX.2021 (OULU <http://tun.fi/GAT.1941>).

Hamatocaulis lapponicus (Norrl.) Hedenäs

FINLAND. Karelia borealis (Kb/PK), Tohmajärvi, Heinäselkä. Birch fen, rust effect. Few shoots in a small area. Coll. Ville Vesakoski 10.VI.2021, det. Ville Vesakoski & Risto Virtanen 2021 (OULU <http://id.herb.oulu.fi/GAL.12778>).

Hedwigia emodica Hampe ex Müll.Hal.**turkkiharmosammal**, vit kakmossa

FINLAND. Satakunta (St), Pori, Kuuminaistenniemi, Maakari, Loukkeennokka. On a stone (about 1 m diam.). Seaside pasture (meadow patches between thickets of *Hippophaë*, *Juniperus communis* and deciduous trees). Coll. Ari Parnela & Harri Arkkio 24.IX.2022 (OULU <http://id.herb.oulu.fi/GAL.17471>); Kainuu (Kn), Kajaani, Jormua. N heath forest of Louhoksentie, 200m from the road. Dry barren heath forest. On the sunny side of a calcareous boulder. Coll. Martti Ohenoja 23.IX.1962, det. Tauno Ulvinen 2008 (as *H. ciliata* var. *leucophaea*) (OULU <http://id.herb.oulu.fi/0012493>).

New species for Finland. The taxon has earlier been treated as a variety of *Hedwigia ciliata* (*H. ciliata* var. *leucophaea* Bruch & Schimp.) as suggested by Hedenäs (1994). Ignatova et al. (2016) recognised the taxon at species level and showed that it is not closely related to *H. ciliata*. Despite the recent studies, there is still doubt whether the European material of *H. emodica* is actually similar to the Russian material or the type material from Himalaya (Hodgetts et al. 2020). For now, we consider *H. emodica* to be the valid name for this taxon. It occurs in forest and alpine zones and grows mostly on dry south-facing cliffs and rocks in open places (Ignatova et al. 2016). It is recognised by straight leaves and long, conspicuous, pure white hair-points. It has smaller spores and more narrowly recurved leaf margins than *H. ciliata*. *Hedwigia mollis* and *H. emodica* can be distinguished by different papillae pattern (Ignatova et al. 2016). According to Hodgetts & Lockhart (2020) *H. emodica* occurs in most Central and Southern European countries, and it is assessed

as threatened in Slovenia. In Russia it is the most widespread and frequent taxon of the genus, especially in the Asian part of the country (Ignatova et al. 2016). Brotherus (1923) recognises this taxon as *H. ciliata* var. *leucophaea* but does not report it from Finland. In recent decades, there has been scattered observations of the taxon in Finland, but no studies have been made on its' distribution and frequency. The older Finnish herbarium specimens have not been thoroughly re-examined yet.

Hedwigia mollis Ignatova, Ignatov & Fedosov**vanuharmosammal**

FINLAND. Kainuu (Ok/Kn), Kuhmo. Friendship Park, Juortanansalo-Lapinsuo Mire Reserve, margin of Isosuo. Bedrock exposures (migmatites). Coll. Margarita Boychuk 18.VI.2009, det. Margarita Boychuk 2022 (TUR <http://mus.utu.fi/TBR.129129>).

New species for Finland. *Hedwigia mollis* was described as new to science by Ignatova et al. (2016) based on multiple specimens mainly from the European part of Russia. It was revealed from the Murmansk region and Karelia to the Caucasus, and from South Urals and Altai Mts. It grows in mesic and xeric habitats, both open and shaded, on boulders and rock outcrops in steppe, forest and subalpine zones (Ignatova et al. 2016). It is closely related to *H. ciliata*, but differs from it by narrowly and shortly recurved leaf margins, smaller spores and smaller papillae (Ignatova et al. 2016). According to Hodgetts & Lockhart (2020) the species has been recorded only in Russia, but the distribution in Europe and other parts of the world is still poorly known. Recently, Boychuk & Várkonyi (2022) have reported three specimens from Friendship Park in Kuhmo.

Hygroamblystegium humile

(P.Beauv.) Vanderp., Goffinet & Hedenäs

FINLAND. Tavastia australis (Ta/EH), Janakkala, Harvia-la. Alluvial (regulated) meso–eutrophic fen in the E part of Niemenpää, 150 m NNW of the mouth of river Hiidenjoki. On flark surface. Coll. Teppo Häyhä 29.IV.2021, conf. Tauno Ulvinen 2021 (OULU <http://id.herb.oulu.fi/GAL.11360>).

Hygrohypnum styriacum (Limpr.) Broth.**kurupurosammal**, uddbäckmossa

FINLAND. Lapponia enontekiensis (Le/EnL), Enontekiö, Etu-Halti. SW base of Háldečahka, N shore of Biggosjärvi. Spring brook. On wet stones in the seepage area at the foot of a slope. Two observations in a couple of m².

Coll. Kimmo Syrjänen 22.VII.2020 (TUR <http://mus.utu.fi/TBR.126748>).

New species for Finland. *Hygrohypnum styriacum* (Limpr.) Broth. is a rather small *Hygrohypnum* -species (shoot length about 2–4 cm) with broadly ovate concave stem leaves that narrow abruptly to a rather long apiculus. It may be closely related to often larger *Hygrohypnum luridum*, but the more triangular leaves of *H. styriacum* are patent with sometimes reflexed apex and the leaf margin can be occasionally denticulate at base. In *H. luridum* leaves are straight or often more or less (sub)falcate, sometimes with slight denticulation in apex. Upper laminal cells of *H. styriacum* are 5–7 times as long as wide while in *H. luridum* they are 7–14 times as long as wide. Group of basal and alar cells is smaller and less prominent in *H. styriacum*. *Hygrohypnum styriacum* is a rare species in Scandinavian mountains with scattered occurrences in Northern Sweden and through Norway (Artfakta 2023a). In other parts of Europe, it is rare in alpine parts of Central Europe and in Scotland. In Sweden, *E. styriacum* is considered vulnerable (VU) in Red List with only a few known present localities as well as with a very small number of subpopulations and individuals (Artfakta 2023b). In Norway, it is considered critically endangered (CR) (Artsdatabanken 2023a). The northernmost growing site in Norway is in Troms and Finnmark Parish close to Skibotn, not far from the Finnish locality.

Kiaeria glacialis (Berggr.) I.Hagen

FINLAND. Laponia kittilensis (Lkk/KiL), Muonio, Pallas-Yllästunturi National Park, Palkaskero, NE-slope of the fjell, *Nardus stricta* -meadow on bottom of a depression, on soil. Coll. Sanna Huttunen 9.VII.2021 (TUR <http://mus.utu.fi/TBR.125869>).

Lewinskya elegans (Schwägr. ex Hook. & Grev.)

F.Lara, Garilleti & Goffinet

FINLAND. Kainuu (Ok/Kn), Kuhmo. Friendship Park, Ulvinsalo Strict Nature Reserve, near Jylkynsalo. Grass *Myrtillus* spruce (with birch and aspen) forest, on aspen tree bark. Coll. Margarita Boychuk 19.VIII.2008, det. Margarita Boychuk 2022 (TUR <http://mus.utu.fi/TBR.129130>). See also Boychuk & Várkonyi (2022).

Nyholmiella gymnostoma

(Bruch ex Brid.) Holmen & E.Warnecke

FINLAND. Ostrobothnia media (Om/KP), Kokkola, Rimmi, Perhonjoki (Vetelinjoki), SW part of island Isosaari.

Epiphyte. Abundant on *Populus* trunk (diam. 50 cm), apparently up to 5 m height, in herb-rich forest. Coll. Timo Kypärä 4204, 20.IX.2022 (OULU <http://tun.fi/GAT.2289>); Kainuu (Ok/Kn), Sotkamo, Jormasjärvi, S part of island Ketrisaari. Epiphyte. On *Populus* trunk (diam. 35 cm) on shore. Scarce among *N. obtusifolia*. Observed patches of *Nyholmiella* up to 4 m height. Coll. Timo Kypärä 3614, 12.VII.2021 (OULU <http://tun.fi/GAT.1698>).

Orthotrichum stramineum Hornsch. ex Brid.

FINLAND. Ostrobothnia australis (Oa/EP), Seinäjoki, Hopeavuorenmäki, S part of Natura 2000 area of Näättypi. Epiphyte. On *Populus* trunk (diam. 35 cm) in a mature spruce-dominated herb-rich forest. Small tufts in 2 dm². Coll. Timo Kypärä 3932, 16.V.2022 (OULU <http://id.herb.oulu.fi/GAL.17524>).

Philonotis capillarlis Lindb.

FINLAND. Tavastia borealis (Tb/PH), Virrat, Jäähdyshoja, Ala-Mylly. Mat-like patch on a stone in the rapids and on the nearby bank. Coll. Tuomo Kuitunen 3660, 13.IX.2018, conf. Ari Parnela (JYV <http://tun.fi/LC.21396>).

Plagiomnium elatum (Bruch & Schimp.) T.J.Kop.

FINLAND. Tavastia borealis (Tb/PH), Virrat, Hauhuu. A rapids in the outletting brook from lake Osmojärvi. On wet litter. In the brook thicket. Coll. Ari Parnela & Harri Arkio 10.VII.2020 (OULU <http://id.herb.oulu.fi/GAL.8036>).

Plagiomnium undulatum (Hedw.) T.J. Kop.

FINLAND. Karelia ladogensis (Kl/LK), Parikkala, Savikumpu, Myllyjoki. Stony brook ravine with *Alnus incana*, E of the main road. Coll. Roland Skytén & Klaus Silfverberg 2354a, 5.VIII.1979, det. Johannes Enroth 2021 (H <http://id.luomus.fi/HA.H4263026>).

Plagiothecium latebricola Schimp.

FINLAND. Karelia borealis (Kb/PK), Rautavaara, Angervikko, in the base of NE slope of Keyritynmäki, near road. Old rotten stump by a ditched brook, 3 dm² patch. Coll. Timo Kypärä 3979, 2.VI.2022 (OULU <http://id.herb.oulu.fi/GAL.17535>).

Plagiothecium platyphyllum Mönk.

FINLAND. Satakunta (St), Karvia, Kantti, river Karvianjoki. Spring complex of fish farm. 100 m W of the river bend of Karvianjoki, 35 m N of power line. A couple of small patches immediately downstream of the spring pool. On the edge of spring brook. Coll. Teppo Häyhä 1539, 12.VII.2022 (OULU <http://id.herb.oulu.fi/GAL.17824>); Karelia ladogensis (Kl/LK), Parikkala, Kirjavalva, Lappalaismäki. Among bryophytes in a spring complex. Fairly abundant. Coll. Tuomo Kuitunen 4437, 12.VII.2022, det. Tauno Ulvinen 2023 (OULU <http://id.herb.oulu.fi/GAL.17710>); Ostrobothnia media (Om/KP), Nivala, Koskenperä, W part of nature protection area (Majakankaan tervalepikko). The

edge of a spring pool, on peat. 2 dm² patch. Coll. Timo Kypärä 4197, 19.IX.2022 (OULU <http://tun.fi/GAT.2282>).

Plagiothecium rossicum Ignatov & Ignatova
idänlaakasammal

FINLAND. Kainuu (Ok/Kn), Kuhmo. Friendship Park. Juortanansalo-Lapinsuo Mire Reserve, margin of Isosuo. Bedrock exposures (migmatites). Coll. Margarita Boychuk 18.VI.2009, det. Margarita Boychuk 2022 (TUR <http://mus.utu.fi/TBR.129135>).

New species for Finland. *Plagiothecium rossicum* was described as new to science by Ignatova et al. (2019) based on multiple sequenced specimens from both European and Asian parts of Russia. The species is splitted from *Plagiothecium laetum* complex. In the European part of Russia, it is common in boreal and hemiboreal forests, growing on trunk bases and stumps, on siliceous rocks and sandy soil. According to Ignatova et al. (2019), *P. rossicum* is more common than *P. laetum* or *P. curvifolium* in Russia. *Plagiothecium rossicum* is differentiated from *P. laetum* by flat leaf margins and strongly asymmetrical leaves. According to Hodgetts & Lockhart (2020), the species has been recorded in Poland, Kaliningrad region and Russia, but the distribution in Europe and other parts of the world is still poorly known. Recently, Boychuk & Várkonyi (2022) have reported five specimens from Friendship Park in Kuhmo.

Plagiothecium succulentum (Wilson) Lindb.

FINLAND. Regio kuusamoënsis (Ks), Salla, Salla National Park, Julmoiva, S of Pitkälampi, seasonally dry brook in NE slope. On mineral soil. 3 dm² patch. Coll. Timo Kypärä 4183, 9.IX.2022 (OULU <http://tun.fi/GAT.2268>).

Plagiothecium undulatum (Hedw.) Schimp.

FINLAND. Ostrobothnia media (Om/KP), Siikalatva, Haapavuori. Mature paludified *Picea*-dominated forest, on a small clearing among spruce seedlings. Coll. Marika Laurila 13.XI.2022, det. Risto Virtanen 2022 (OULU <http://id.herb.oulu.fi/GAL.15208>).

Platydictya jungermannioides (Brid.) H.A.Crum

FINLAND. Satakunta (St), Pori, Kallo. In crevices on a seaside cliff where surf washes against the rock, next to Kallo lighthouse. Coll. Harri Arkkio 1581, 12.X.2021, det. Tauno Ulvinen 2022 (OULU <http://id.herb.oulu.fi/GAL.12872>).

Platyhypnum norvegicum (Schimp.) Ochyra

FINLAND. Kainuu (Kn), Suomussalmi, Hossa, river Hosanjoki, rapids Leveänkoski. On stones and boulders in a

rapid at waterline. Common along 100 m. Coll. Visa Tolonen & Tuuli Korhonen 3.VIII.2022, det. Krister Karttunen 12.X.2022 (H <http://id.luomus.fi/HA.H4272380>); Regio kuusamoënsis (Ks), Salla, Salla National Park, Julmoiva, S of Pitkälampi. On a forested NE-facing slope, on a stone by a seasonally dry brook. Abundant 6dm² patch. Coll. Timo Kypärä 4167, 26.VIII.2022 (OULU <http://tun.fi/GAT.2252>); Lapponia kittilensis (Lkk/KiL), Muonio, middle reach of spring rivulet descending from fell Lommolunturi to Lompolonvuoma where steep and stony riffle meets the base of a twin trunk spruce. Supposedly scarce, found in the specimen collected for another species. Coll. Timo Kypärä 4043, 4.VII.2022 (OULU <http://id.herb.oulu.fi/GAL.17550>).

Pohlia annotina (Hedw.) Lindb.

FINLAND. Ostrobothnia media (Om/KP), Kokkola, Rimmi, river Perhonjoki (Vetelinjoki), Lilla Hömossen, E bank of rapids Vekkaloforsarna. On mineral soil, gravel between stones. Small patches in a few dm² area. Coll. Timo Kypärä 4205, 21.IX.2022 (OULU <http://tun.fi/GAT.2290>).

Pohlia camptotrachela (Renaud & Cardot) Broth.

FINLAND. Tavastia australis (Ta/EH), Tammela, Pihtikoski, about 230m WSW of Lehtola. Mesic heath forest. Small patch in a moist trail. Coll. Sari Metsänoja 27.VIII.2022, conf. Tauno Ulvinen 2022 (TUR <http://mus.utu.fi/TBR.128800>).

Polytrichastrum sexangulare (Brid.) G.L.Sm.

FINLAND. Lapponia sompiensis (Lks/SoL), Sodankylä, Saariselkä, E slope of Kiilopää. In a rock crevice, in a shallow ravine. Coll. Seppo Vuokko & Tapio Rintanen 23.VII.1966, det. Tauno Ulvinen 1999 (H <http://id.luomus.fi/HA.H4204940>).

Polytrichum perigoniale Michx.

törmäkarhunsammal, vägbjörnmossa

FINLAND. Tavastia borealis (Tb/PH), Virrat, Korte, Korteneva. Peat loading area, former parking lot. A paludifying, thicketing, partly muddy moraine field. Coll. Ari Parnela 25.VI.2015, det. Tauno Ulvinen 2021 (OULU <http://id.herb.oulu.fi/GAL.8494>).

New species for Finland. The taxon has earlier been treated as a variety of *Polytrichum commune* (*Polytrichum commune* var. *perigoniale* (Michx.) Hampe) but recent literature points out that it is more closely related to several non-European species than to *P. commune* s.str. (Hodgetts et al. 2020 and the references therein). The taxon has been earlier reported to occur in Finland in several biogeographical provinces (Al, Ab, N; Brotherus 1923). It occurs in drier habitats than *P. commune* s.str.: in sandy shores,

roadsides and dried-up peaty soil. According to Brotherus (1923) and Nyholm (1968), *P. perigoniale* has more crowded leaves, narrower marginal cells of lamellae and shorter capsules than *P. commune* s.str. It is still not clear, though, if their species concept matches with the recent molecular evidence. Hodgetts & Lockhart (2020) report the species from Sweden, Norway, Denmark and many countries in Central and Southern Europe. In Sweden, there are scattered observations from the whole country but concentrating in southern provinces (Artfakta 2023c). The older Finnish herbarium specimens have not been thoroughly re-examined yet.

Pseudephemerum nitidum (Hedw.) Loeske

FINLAND. Ostrobothnia media (Om/KP), Kokkola, Rimmi, Perhonjoki (Vetelinjoki), N part of Isoasaari. On mineral soil. Clayey bottom of a seasonally dry pond in a moist herb-rich forest. ½ m² patch. Coll. Timo Kypärä 4203, 20.IX.2022 (OULU <http://tun.fi/GAT.2288>).

Ptychostomum cernuum (Hedw.) Hornsch.

FINLAND. Ostrobothnia ouluensis (Obo/OP), Oulu, Kii-minki. NE of confluence of streams Juuanjoki and Paju-oja, between barn and river. Inundated *Filipendula* meadow. Coll. Martti Ohenoja LXVb, 27.IX.1964, conf. Risto Virtanen 2023 (OULU <http://id.herb.oulu.fi/GAL.6580>). Ostrobothnia ultima (Obu/PeP), Rovaniemi, Vanttauskoski, Hyypiöniemi, Sadinoja. N of the main road, on an eroding brook bank. 2 m² patch on mineral soil. Coll. Timo Kypärä 2932, 19.IX.2019, conf. Tauno Ulvinen 2023 (OULU <http://tun.fi/GAT.1017>).

Ptychostomum inclinatum (Sw. ex Brid.) J.R. Spence

FINLAND. Tavastia borealis (Tb/PH), Virrat, Jäähdyshoja, Ala-Mylly. On the bank and stones of rapids. Fairly abundant. Coll. Tuomo Kuitunen 3631, 13.IX.2018, conf. Ari Parnela 2019 (JYV <http://tun.fi/LC.21379>).

Pulvigerella lyellii

(Hook. & Taylor) Plášek, Sawicki & Ochrya

FINLAND. Regio aboënsis (Ab/V), Kemiönsaari, W part of island Långholmen. Herb-rich *Populus*-dominated forest of *Cardamine bulbifera*-*Lathyrus* type. On ten *Populus* trunks of varying size. Patches 3 cm × 3 cm – 10 cm × 8 cm. Coll. Liisa Maanpää & Anton Lehtinen (TUR <http://mus.utu.fi/TBR.127511>).

Racomitrium ericoides (Brid.) Brid.

FINLAND. Lapponia sompiensis (Lks/SoL), Sodankylä, Ulkusijankangas N. Along pipeline-road alignment. On roadside gravel/sand. Scattered as sparse patches over 3 dm² area. Coll. Sami Hamari 21.VII.2021, det. Tauno Ulvinen 2021 (OULU <http://id.herb.oulu.fi/GAL.11110>).

Schistidium dupretii (Thér.) W.A. Weber

FINLAND. Satakunta (St), Huittinen, Vampula, Rutava, Eskolankallio W. Limestone quarry. At the base of a rough surface of an old quarry wall (still at the pioneering state). Coll. Ari Parnela 12.V.2012, conf. Tauno Ulvinen 2015 (OULU <http://id.herb.oulu.fi/0035035>). Savonia australis (Sa/ES), Savonlinna, Kerimäki, Hälvä, Suuri-Hytermä, Komeroniemi. On concrete. At the base of a massive monument. Common and fairly abundant. Coll. Timo Kypärä 3943, 20.V.2022 (OULU <http://id.herb.oulu.fi/GAL.17526>).

Schistidium frivollianum H.H. Blom

FINLAND. Karelia borealis (Kb/PK), Juuka, Nunnanlahti, Halolanpää, S of lake Mölönjärvi. On a cliff near an old quarry. Patches of about 5 dm² in 2 m² area. Coll. Timo Kypärä 3549, 31.V.2021, det. Tauno Ulvinen 2022 (OULU <http://tun.fi/GAT.1633>).

Schistidium scandicum H.H. Blom

FINLAND. Ostrobothnia ultima (Obu/PeP), Tervola, Peura, SW slope of Pukinselkä. On rock, ½ dm² patch. Coll. Timo Kypärä 3636, 17.VII.2021, det. Tauno Ulvinen 2022 (OULU <http://tun.fi/GAT.1720>).

Schistidium submuticum H.H. Blom

FINLAND. Kainuu (Ok/Kn), Sotkamo, Tipasoja, Vuoriniemi by Syväsalmi. On a shelf of shore cliff, ½ dm² patch on rock. Coll. Timo Kypärä 3611, 12.VII.2021 (OULU <http://tun.fi/GAT.1695>).

Sciurohypnum tromsoeense

(Kaurin & Arnell) Draper & Hedenäs

FINLAND. Kainuu (Ok/Kn), Kajaani, Karolinenburg. On stone. Coll. V.F. Brotherus IX.1871, det. Sanna Huttunen 2015 (H <http://id.luomus.fi/HA.H4018455>). Ostrobothnia ultima (Obu/PeP), Alatornio, Varajärvi. On dolomite boulders at the village hill. Coll. A.V. Auer 2.VII.1937, det. Sanna Huttunen 2015 (TUR <http://mus.utu.fi/TBR.1365>). Regio kuu-samoënsis (Ks), Taivalkoski, Kurtinkylä, Kurtinjärvi. On a stone on lakeshore, in an *Alnus incana* stand. Coll. A.V. Auer 19.VII.1936, det. Sanna Huttunen 2015 (TUR <http://mus.utu.fi/TBR.1359>). Lapponia kittilensis (Lkk/KiL), Muonio, Kätkäsvanto. Coll. J.P. Norrlin 2.IX.1867, det. Sanna Huttunen 2015 (H <http://id.luomus.fi/HA.H4018565>).

Sphagnum annulatum H. Lindb. ex Warnst.

FINLAND. Ostrobothnia ouluensis (Obo/OP), Pudasjärvi, Ala-Livo, Karhusuo. NW of lake Takalampi. Mesotrophic flark fen. Coll. Tauno Ulvinen 4.VIII.1976, det. Tauno Ulvinen 2021 (OULU <http://id.herb.oulu.fi/GAL.15838>).

Sphagnum divinum Flatberg & Hassel

FINLAND. Alandia (Al/A), Lemland parish, Nätö, Västerberget. On hummock in spruce forest at wet depression. Coll. Sinikka Piippo 8.VII.1980, det. Lorenzo Veglio 2022 (H <http://id.luomus.fi/HA.H4272545>). Nylandia (N/U), Siuntio,

Järvinummi, S of Lakiasuo, Kurjen Suursuo. Thin-peated spruce mire. Abundant. Coll. Kati Pihlaja 12.IX.2021, det. Kati Pihlaja 2022 (TUR <http://mus.utu.fi/TBR.128543>). Savonia australis (Sa/ES), Mäntyharju, Dwarf-shrub pine mire. Coll. Ainikki Väliuori 1.VI.1941, det. Lorenzo Veglio 2022 (H <http://id.luomus.fi/HA.H4272534>). Ostrobothnia media (Om/KP), Sievi. Coll. Viljo Kujala 13.VIII.1923, det. Lorenzo Veglio 2022 (H <http://id.luomus.fi/HA.H4272528>). Regio kuusamoënsis (Ks), Posio, Pikku Karitunturi S. On hummock. Sedge hardwood-spruce fen. Coll. Riikka Juutinen 13.XIII.2021 (OULU <http://id.herb.oulu.fi/HT.35743>).

Sphagnum inundatum Russow

FINLAND. Ostrobothnia media (Om/KP), Kauhava, Korttesjärvi, Saarijärvi. W shore. 4 m². Coll. Ville Vesakoski 28.VIII.2022 (OULU <http://id.herb.oulu.fi/GAL.14442>).

Sphagnum medium Limpr.

FINLAND. Alandia (Al/A), Lemland, Rörstorp, E margin of Stormossen, *Eriophorum vaginatum* pine mire. Coll. Pekka Isoviita 24.VII.1962, det. Lorenzo Veglio 2022 (H <http://id.luomus.fi/HA.H4272541>). Nylandia (N/U), Siuntio. Järvinummi, Lakiasuo S. Mesotrophic tall sedge pine fen. Abundant. Coll. Kati Pihlaja 12.IX.2021, det. Kati Pihlaja 2022 (TUR <http://mus.utu.fi/TBR.128540>). Ostrobothnia australis (Oa/EP), Kurikka, Jalasjärvi, Koskue, Erkkilänmäki, about 380m SW from the crossroads of Erkkilänmäentie and Mäntykuja. Ditch margined bog patch with small pools. Abundant in the bog margins on lawn surface. Coll. Kati Pihlaja 21.IV.2019, det. Kati Pihlaja 2022 (TUR <http://mus.utu.fi/TBR.119978>).

Sphagnum pulchrum (Lindb. ex Braithw.) Warnst.

FINLAND. Lapponia kittilensis (Lkk/KiL), Kolari, Pohjasenvaara. Eutrophic pine fen. Coll. Juha Siitonen 10.XIII.1988, det. Tauno Ulvinen 2021 (OULU <http://id.herb.oulu.fi/GAL.13486>). Lapponia enontekiensis (Le/EnL), Enontekiö, Pallas-Yllästunturi National Park, Onnasjoki. Around a mesotrophic spring in the margins of a pine fen. Coll. Niina Sankari 6.XIII.1999, det. Tauno Ulvinen 2021 (OULU <http://id.herb.oulu.fi/GAL.9997>).

Sphagnum subnitens Russow & Warnst.

FINLAND. Lapponia sompiensis (Lks/SoL), Sodankylä, Peurasuvanto, Mukkajärvenoja. Eutrophic birch fen. Coll. Teemu Tahvanainen, Tiina Kolari & Ella Romppanen 28.VII.2022, det. Teemu Tahvanainen 2022, conf. Risto Virtanen 2022 (OULU <http://id.herb.oulu.fi/GAL.17322>).

Splachnum melanocaulon (Wahlenb.) Schwägr.

FINLAND. Tavastia australis (Ta/EH), Tammela, Saari-Kaukola, about 200m N of Tuhkamäki. At a drier spot on the S margin of a small fen with few trees and many flarks. Probably deer dung. Two tufts with less than a dozen sporophytes on the same dung. Coll. Sari Metsänoja 4.VI.2022, conf. Kati Pihlaja 2022 (TUR <http://mus.utu.fi/TBR.102605>).

Syntrichia norvegica F.Weber

FINLAND. Karelia ladogensis (KI/LK), Parikkala, Intsilä, Pitkäsuo. On a stone, on top of a cliff. Scarce. Coll. Tuomo Kuitunen 4469, 14.VII.2022, conf. Ari Parnela 2022 (OULU <http://id.herb.oulu.fi/GAL.17725>). Savonia borealis (Sb/PS), Pieksämäki, Montola. Former limestone quarry. On concrete of abandoned structures. Coll. Ari Parnela & Harri Arkkio 31.XIII.2022 (OULU <http://id.herb.oulu.fi/GAL.17470>).

Tetradontium repandum (Funck) Schwägr.

FINLAND. Karelia borealis (Kb/PK), Kuopio, Juankoski, Ala-Siikajärvi, Kypäräinen N. A weathering horizontal vein in a N-facing rock wall. Patch cover 3 cm × 10 cm. Coll. Timo Kypärä 3573, 14.VI.2021 (TUR <http://mus.utu.fi/TBR.127326>).

Thuidium delicatulum (Hedw.) Schimp.

FINLAND. Karelia borealis (Kb/PK), Kuopio, Juankoski, Likolahti, in the middle part of Huosiaisniemi, E shore. On a rock wall shelf, ¼ dm² patch. Coll. Timo Kypärä 3591, 17.VI.2021 (OULU <http://tun.fi/GAT.1675>). Ostrobothnia ouluensis (Obo/OP), Oulu, Kiiminki, Vasikkasuo. E margin of heath patch situated in the center of mire Vasikkasuo. At the base of a boulder. 10 dm² patch. Coll. Timo Kypärä 3626, 15.VII.2021 (OULU <http://tun.fi/GAT.1710>).

Tortella alpicola Dixon

tunturikiertosammal, alpkalkmossa

FINLAND. Lapponia enontekiensis (Le/EnL), Enontekiö, Etu-Halti, N-facing slope of Bihčosjohka. Moist, eutrophic mountain heath with dwarf birches. On a small, nutrient-rich, calcareous cliff. Scarce. Coll. Kimmo Syrjänen 22.VII.2020 (TUR <http://mus.utu.fi/TBR.126929>).

New species for Finland. *Tortella alpicola* Dixon was first discovered in Europe from Ural Mountains in Russia (Otnyukova et al. 2004). Since this publication and the find from Spain (Sierra Nevada Mountain range) with good photos in Rams et al. (2006), the species have been recognized in several other mountainous European countries including France, Norway, Austria, Switzerland, the Canary Islands and Sweden (see Hodgetts & Lockhart 2020). The most recent finds are from the Italian Alps (Ellis et al. 2020). Finnish observation was thus not unexpected but still a kind of a stroke of luck. The day was very cold, stormy, and so rainy that even the use of hand-lens was not possible in the field. Along Märfejojha river, there was only a single small spot of calcareous rock with species-rich vegetation. A small Pottiaceae cushion with superficial appearance of *Trichostomum/Oxystegus*

tenuirostris (and actual hope for an arctic *Weissia* sp.) launched collection instincts. After coming back to the camp in the evening – that was under flood, and the night went in storm with relocating wet tents and sleeping bags – most of collected specimens got wet and they were afterwards molded during the two weeks field trip. Winter-time microscopy revealed first a disappointment, just a *Tortella* sp., as usual. The small specimen was weary and most of the fragile leaf tips were dropped into the envelope. However, these strange sausage-like papillose cylindrical caducous leaf tips and few remaining leaf tips with regular constrictions revealed *T. alpicola*. In Sweden, the species was also found just recently, but there are already 11 observations in the fells of Lapland, and the species is classified as data deficient (DD) in the Red List (Artfakta 2023d). In Norway, *T. alpicola* is classified as Near Threatened (NT) in the Red List and there are some dozens of scattered localities through the mountain chain with the closest localities of Finland in Troms and Finnmark Parish close to Skibotn, and in middle Finnmark along the canyon of the River Alta (Artsdatabanken 2023b). There must be a few more localities also in the arctic-alpine Finland.

Tortula mucronifolia Schwägr.

FINLANDIA. Alandia (AI/A), Saltvik, Kvambo. N of the church. On clay, on the flat side of a rock outcrop in a field. Coll. Tauno Ulvinen 4.IX.2001, det. Tauno Ulvinen 2021 (OULU <http://id.herb.oulu.fi/GAL.8867>).

Ulota crispa (Hedw.) Brid. sensu lato

FINLAND. Satakunta (St), Rauma, Nurmes, Mansikkakari. On the trunk of a sturdy *Populus tremula*, in mesic herb-rich forest with many sturdy *Populus* trees. Scarce. Coll. Turkka Korvenpää 27.IX.2021 (TUR <http://mus.utu.fi/TBR.128289>).

Ulota intermedia Schimp.

eteläntakkusammal, mellanulota

FINLAND. Regio aboënsis (Ab/V), Raasepori, Pohja, Brödorp, NW slope of Björkkulla. Herb-rich forest with hazel. Plenty of *Ulota* tufts on *Corylus avellana* trunks. Coll. Esa Ervasti 18.IV.2018, det. Esa Ervasti 2023 (TUR <http://mus.utu.fi/TBR.129110>).

New species for Finland. The taxon has in recent decades been treated as variety of *Ulota crispa* (*U. crispa* var. *intermedia* (Schimp.) Cardot). The *Ulota crispa* complex has been under

debate for centuries whether it contains one or several species. The recent morphological and molecular evidence clearly shows three separate taxa worth of species rank: *Ulota crispa* s.s., *U. crispula* and *U. intermedia* (Caparrós et al. 2016). Brotherus (1923) recognises these three taxa at species level and report them all from Finland (*U. intermedia*: Al). In contrast, Nyholm (1968) treats *Ulota crispa* s.l. as one species with three varieties but mentions that var. *crispula* could be a minor genetic variation or a modification growing in dry habitats. *U. crispa* var. *intermedia* she denies having seen in Scandinavia (Nyholm 1968). According to Caparrós et al. (2016), these three taxa can be separated in the field using macroscopic characters of capsule shape, constriction of the urn below the mouth when dry, possible splitting of peristome teeth, the sporophyte total length, the size of the cushions and the degree of crispature of leaves when dry. *Ulota intermedia* can be identified by medium to large cushions, large spores, capsules maturing in late summer, capsules cylindrically shaped and not constricted below mouth when dry and empty, and splitting peristome teeth (Caparrós et al. 2016). *Ulota intermedia* shows a Holarctic disjunct distribution, being present in western North America (mainly Alaska and Canada), eastern North America (mainly Canada), northern Europe, Altai, Russian Far East and Japan. It seems to prefer high elevational and altitudinal areas in the temperate zone (Caparrós et al. 2016). In Finland, the current distribution and frequency of these three taxa is not known, but it is probable that all of them occur in the southern parts of the country, as they do in Sweden (Artfakta 2023e). There are plenty of old Finnish herbarium specimens which have not been thoroughly re-examined yet. As the situation with these taxa remains unsolved for now, we keep *Ulota crispa* sensu lato on the Finnish checklist, accompanied by *Ulota intermedia*, of which we have a recently identified specimen.

Warnstorfia pseudostraminea

(Müll.Hal.) Tuom. & T.J.Kop.

FINLAND. Lapponia kittilensis (Lkk/KiL), Kittilä, Veitervasa, Rytijänkkä. Coll. Riikka Juutinen, Lauralotta Muurinen & Oona Allonen 16.IX.2021, det. Riikka Juutinen (OULU <http://id.herb.oulu.fi/HT.35759>).

New records – Marchantiophyta

Aneura maxima (Schiffn.) Steph.

FINLAND. Regio kuusamoënsis (Ks), Kuusamo, Merenvaara, Hangasjärventaussuo. Peatland. Coll. Jarmo Laitinen 22.VII.2010, det. Risto Virtanen & Lauralotta Muurinen 2022 (OULU <http://id.herb.oulu.fi/GAL.12142>). Lapponia sompiensis (Lks/SoL), Savukoski, Sokli, Ainijärvi. Eutrophic birch fen. Coll. Tiina Kolari 24.VII.2022, det. Risto Virtanen 2022 (OULU <http://id.herb.oulu.fi/GAL.15347>).

Calypogeia fissa (L.) Raddi

FINLAND. Karelia australis (Ka/EK), Miehikkälä, Laajanpohja. Spring complex on the E margin of Laajanpohjansuo. Margin of the northernmost spring pool. On moist, half bare peat. Coll. Teppo Häyhä 1437a, 11.V.2021 (OULU <http://id.herb.oulu.fi/GAL.11326>).

Cephalozia lacunculata

(J.B.Jack ex Gottsche & Rabenh.) Spruce

FINLAND. Karelia borealis (Kb/PK), Lieksa, Ruunaa, Neitiniemi. In the W end of mire Lakkapäänsuo next to bay Lakkapäänlahti. Old fallen spruce (diam. 40cm) in *Myrtilus* spruce mire – drained *Myrtilus* peatland forest. 2dm² pure patch. Coll. Timo Kypärä 3099, 25.V.2020, double-blind determination: det. Timo Kypärä 2020, Xiaolan He 2022 (TUR <http://mus.utu.fi/TBR.126595>). Lapponia sompiensis (Lks/SoL), Pelkosenniemi, Pyhä-Luosto National Park, Pyhäkuru. Near the waterfall descending to pond Pyhänkasteenlampi. Wet rock wall next to a small waterfall. On peat. Scarce, single shoots among other bryophytes over less than 1 dm² area. Coll. Timo Kypärä 3290, 7.VIII.2020, double-blind determination: det. Timo Kypärä 2020, Xiaolan He 2022 (TUR <http://mus.utu.fi/TBR.128122>).

Previously assessed in Finland as possibly regionally extinct (CR•) (Juutinen et al. 2019).

Cephalozia macounii (Austin) Austin

FINLAND. Regio kuusamoënsis (Ks), Kuusamo, Paljaka, Kovasvaara, S of Kovaslampi, between lakeshore and cliff. A fallen tree (diam. 30cm) on the N-facing slope with spruces in the mesic heath forest. Along 2 m of the log at least 5 dm² patches altogether. Coll. Timo Kypärä 3728, 11.VIII.2021, double-blind determination: det. Timo Kypärä 2021, Riikka Juutinen 2022 (OULU <http://tun.fi/GAT.1812>).

Cephalozia arctogena (R.M.Schust.) Konstant.

Lapponia sompiensis (Lks/SoL), Sodankylä, S part of Hirvilauttanen, cliffs on W side. Rock crevice with serpentine. Coll. Saana Mattanen, Juha Pykälä & Inka Kuusisto 10.IX.2022, double-blind determination: det. Inka Kuusisto 2022, Timo Kypärä 2023 (TUR <http://mus.utu.fi/TBR.128846>).

Cephalozia elachista

(J.B.Jack ex Gottsche & Rabenh.) Schiffn.

FINLAND. Tavastia australis (Ta/EH), Pälkäne, Ämmätsä, Salmenniemi. Margin of a pristine swamp, on hummock's side growing on dry *Polytrichum*. Coll. Tuomo Kuitunen 4589, 7.X.2022, double-blind determination: det. Tuomo Kuitunen 2022, Timo Kypärä 2023, conf. Ari Pamela 2022 (OULU <http://id.herb.oulu.fi/GAL.17753>).

Conocephalum salebrosum

Szweyk., Buczk. & Odrzyk.

FINLAND. Lapponia kittilensis (Lkk/KiL), Muonio, Pallas-Yllästunturi National Park, Pallastunturi, Pyhäjoki, about 200 m from road to Raattama, next to a nature path. Herb-rich forest by a brook. Coll. Risto Virtanen 16.VI.1988, det. E.A. Borovichev 2009 (OULU <http://id.herb.oulu.fi/GAL.9705>).

Diplophyllum obtusifolium (Hook.) Dumort.

FINLAND. Savonia borealis (Sb/PS), Vieremä, Ruuvalanperä, Natura 2000 area of Saarisuo-Kurkisuo. On mineral soil. Exposed heath patch in the N margin of pine mire Kurkisuo. Common at least in 1 m² area. Coll. Timo Kypärä 3972, 30.V.2022 (OULU <http://tun.fi/GAT.2057>). Regio kuusamoënsis (Ks), Posio, Riisitunturi National Park, Lavakangas S. Exposed mineral soil in heath forest. 5 dm² patch. Coll. Timo Kypärä 3742, 13.VIII.2021 (OULU <http://tun.fi/GAT.1826>).

Fuscocephaloziopsis affinis

(Lindb. ex Steph.) Vána et L.Söderstr.

FINLAND. Tavastia australis (Ta/EH), Urjala, Annula. Rapids in the outletting brook from lake Kokkijärvi, N of road Toijala-Urjala. On the brook bank. Coll. Harri Arkkio 23.VIII.2020, det. Timo Kypärä 2020, conf. Riikka Juutinen 2023 (double-blind determination not done) (OULU <http://id.herb.oulu.fi/GAL.7666>).

Fuscocephaloziopsis catenulata

(Huebener) Vána & L.Söderstr.

FINLAND. Nylandia (N/U), Espoo, Nuuksio National Park. On a mesic, partially shaded rotten spruce log in a NE facing slope; in a dense mesic heath forest with *Picea abies*. Abundant. Coll. Annukka Hämäläinen 1973, 20.IX.1994, double-blind determination done: Inka Kuusisto 2023, Timo Kypärä 2023 (H <http://id.luomus.fi/HA.H4255940>).

Fuscocephaloziopsis loitlesbergeri

(Schiffn.) Vána & L.Söderstr.

FINLAND. Lapponia inarensis (Li/InL), Inari, Kaamanen. Pine mire in the margins of a eutrophic fen, among *Sphagnum capillifolium*. Coll. Viivi Lindholm 30.VII.2021, double-blind determination: det. Risto Virtanen 2021, Riikka Juutinen 2023 (OULU <http://id.herb.oulu.fi/GAL.12711>).

Geocalyx graveolens (Schrad.) Nees

FINLAND. Karelia australis (Ka/EK), Miehkikälä, Laajanpohja. Spring complex on the E margin of Laajanpohjansuo. On moist, half bare peat. Margin of the northernmost spring pool. Coll. Teppo Häyhä 1437b, 11.V.2021 (OULU <http://id.herb oulu.fi/GAL.11329>). Ostrobotnia media (Om/KP), Soini, Kukkoneva, Lemetilampi. Spruce mire by the mouth of a brooklet. On a brook bank. Coll. Teppo Häyhä 9.VI.2008 (TUR <http://mus.utu.fi/TBR.106103>).

Gymnocolea borealis (Frisvoll & Moen) R.M.Schust.

FINLAND. Karelia borealis (Kb/PK), Juuka, Petrovaara, N of Merilampi, by the brook Meripuro. Eutrophic pine fen, on peat. Found in the specimen only after sampling. Coll. Timo Kypärä 3537, 20.V.2021 (OULU <http://tun.fi/GAT.1621>). Lapponia kittilensis (Lkk/KiL), Kittilä, Nirtsanvuoma, by the river Aakenusjoki near Rautanaula. On a low stone in a spring complex in the mire margin. 2 dm² patch. Coll. Timo Kypärä 3648, 22.VII.2021 (OULU <http://tun.fi/GAT.1732>).

Gymnomitron brevissimum (Dumort.) Warnst.

FINLAND. Lapponia sompiensis (Lks/SoL), Sodankylä, Urho Kekkonen National Park, Ukselmapää. In the upper part of ravine Lumikuru. Liverwort-dominated snowbed. On soil. Coll. Inka Kuusisto 10.VII.2022 (TUR <http://mus.utu.fi/TBR.128667>). Lapponia inarensis (Li/InL), Utsjoki, Nuvvus, Áilegas. In a ravine E of Áilegas. Snowbed, on mineral soil. Coll. Inka Kuusisto 28.VII.2019, det. Inka Kuusisto 2022 (TUR <http://mus.utu.fi/TBR.127427>).

Lophozia ascendens (Warnst.) R.M.Schust.

FINLAND. Karelia ladogensis (KI/LK), Parikkala, Intsilä, mire Pitkäsuu. On rotten wood of a fallen log. Scarce. Coll. Tuomo Kuitunen 4464, 14.VII.2022, conf. Ari Parnela 2022 (OULU <http://id.herb oulu.fi/GAL.17722>).

Lophozia silvicola H.Buch

FINLAND. Karelia australis (Ka/EK), Miehkikälä, Salomiehikkälä. On stump. Coll. Viljo Kujala 4.VI.1966, det. Heikki Roivainen (H <http://id.luomus.fi/HA.H4262888>).

Marsupella apiculata Schiffn.

FINLAND. Lapponia sompiensis (Lks/SoL), Sodankylä, Urho Kekkonen National Park, Anteripää. N side of the ravine in the NW-facing slope of the fell's E-summit. *Oreojuncus trifidus* and liverwort-dominated snowbed. On soil. Coll. Inka Kuusisto 7.VII.2022 (TUR <http://mus.utu.fi/TBR.128654>).

Marsupella sprucei (Limpr.) Bernet

FINLAND. Lapponia inarensis (Li/InL), Utsjoki, Nuvvus, Áilegas. In a ravine E of Áilegas. Snowbed. On mineral soil. Coll. Inka Kuusisto 28.VII.2019, det. Inka Kuusisto 2022 (TUR <http://mus.utu.fi/TBR.127427>).

Mesoptychia collaris (Nees) L.Söderstr. & Váňa

FINLAND. Karelia borealis (Kb/PK), Kuopio, Juankoski, Ala-Siikajärvi, N part of Kakkossaari. On rock crevice on E shore of the island. Coll. Timo Kypärä 3598, 21.VI.2021, conf. Riikka Juutinen 2022 (OULU <http://tun.fi/GAT.1682>).

Moerckia hibernica (Hook.) Gottsche sensu lato

FINLAND. Karelia ladogensis (KI/LK), Parikkala, Intsilä, Suurmäki, Lähdesuo. On hummock surface in the margins of a mesotrophic fen. Scarce. Coll. Tuomo Kuitunen 4456, 13.VII.2022, det. Ari Parnela 2022 (OULU <http://id.herb oulu.fi/GAL.17720>).

Odontoschisma francisci (Hook.) L.Söderstr. & Váňa

FINLAND. Kainuu (Ok/Kn), Sotkamo, Parkua, E slope of Losonvaara. Seeping ditch by a forest road. On mineral soil. Small patches in ¼ m² area. Coll. Timo Kypärä 4215, 28.IX.2022 (OULU <http://tun.fi/GAT.2300>). Lapponia kittilensis (Lkk/KiL), Kolari, Äkäslompolo, in the upper part of ravine Varkaankuru, S of pond Varkaanlampi. On a stone on a brook bank, 2 dm² patch. Coll. Timo Kypärä 4019, 29.VI.2022 (OULU <http://tun.fi/GAT.2104>).

Oleolophozia perssonii

(H.Buch & S.W.Arnell) L.Söderstr., De Roo & Hedde
FINLAND. Regio aboënsis (Ab/V), Lohja, Hiidensalmi, N of limestone quarry of Tytyri. Field next to the quarry, turnaround of the road. On mineral soil. Small patches in 2 m² area. Coll. Timo Kypärä 3405, 7.IV.2021 (OULU <http://tun.fi/GAT.1489>). Lapponia kittilensis (Lkk/KiL), Kolari, Äkäsjokisuu, Kalkkikangas. Roadside of abolished mining area. On mineral soil. Probably sparsely in a few m² area. Coll. Timo Kypärä 3693, 29.VII.2021 (OULU <http://tun.fi/GAT.1777>).

Porella platyphylla (L.) Pfeiff.

FINLAND. Lapponia enontekiensis (Le/EnL), Enontekiö, Kilpisjärvi, Pikku-Malla. The upper S slope of Pikku-Malla next to the ponds Mallalammets. On stone in the middle of *Polystichum lonchitis*. Scarce, patch coverage less than 1 dm². Coll. Timo Kypärä 3667, 24.VII.2021 (OULU <http://tun.fi/GAT.1751>).

Radula lindenberiana Gottsche ex C.Hartm.

FINLAND. Satakunta (St), Sastamala, Kylmäkoskenmaa. Rocky rapids of Pääjärvenoja between lakes Pääjärvi and Salosjärvi. On stone. Coll. Harri Arkkio & Ari Parnela 2.X.2020, det. Timo Kypärä 2020 (OULU <http://id.herb oulu.fi/GAL.7670>).

Riccardia incurvata Lindb.

FINLAND. Satakunta (St), Pori, Kuuminaistenniemi, Hevoskari, at the bottom of the eastern bay. Swampy, mesotrophic, coastal pasture with 2–3m high *Alnus glutinosa*

-shrub. On bare soil. Abundant (> 10 patches of diam. 5 cm) in 10 m² area. Coll. Sanna Huttunen 24.IX.2022 (TUR <http://mus.utu.fi/TBR.127720>). Lapponia enontekiensis (Le/EnL), Enontekiö, Toskajärvi. Flat dolomite cliffs, 400–500 m N of the lake. Occasionally moist area. On bare moist calcareous soil. Coll. Kimmo Syrjänen 29.VII.2020 (TUR <http://mus.utu.fi/TBR.126875>).

Riccardia latifrons (Lindb.) Lindb. subsp. *arctica*

R.M.Schust. & Damsh.

FINLAND. Tavastia australis (Ta/EH), Pälkäne, Vahdermetsä, Kurkisuo. Margin of a swamp near Laarinniemi. On litter, lawn surface. Scarce. Coll. Tuomo Kuitunen 4597, 22.X.2022, conf. Ari Parnela 2022 (OULU <http://id.herb.oulu.fi/GAL.17754>).

Riccardia multifida (L.) Gray

FINLAND. Satakunta (St), Parkano, Vahojärvi, Aurejoki, Kurkiniemenkoski. Along shore line on rock and tree roots. Coll. Ari Parnela & Tuomo Kuitunen 11.IX.2020 (OULU <http://id.herb.oulu.fi/GAL.7829>).

Riccia fluitans L.

FINLAND. Ostrobothnia ouluensis (Obo/OP), Oulu, Hietasaari. The shore of Oulunselkä, SW of the spa. On plant debris behind the reeds. In small area. Coll. Harri Arkkio 22.VII.2021 (OULU <http://id.herb.oulu.fi/GAL.11606>).

Riccia glauca L.

FINLAND. Ostrobothnia ultima (Obu/PeP), Rovaniemi, Vanttauskoski, Hyypiöniemi, S shore of Hyypiöperä, W of Saunakallio. Rocky shore, gravel at the water's edge, on mineral soil. Abundant in a couple of ares. Coll. Timo Kypärä 2940, 20.IX.2019, det. Kimmo Syrjänen 2019 (OULU <http://tun.fi/GAT.1025>).

Scapania apiculata Spruce

FINLAND. Regio kuusamoënsis (Ks), Salla, Oulanka National Park, Oulankajoki. W shore of lake Savilampi next to wilderness cabin, S shore of river Oulankajoki descending from the canyon. On rotten wood. Shoots along the entire log (2m × 30cm) drifted by flood to the bank of stream/pond. Herb-rich forest. Coll. Timo Kypärä 3772, 31.VIII.2021 (OULU <http://tun.fi/GAT.1856>).

Scapania obscura (Arnell & C.E.O.Jensen) Schiffn.

FINLAND. Lapponia inarensis (Li/InL), Utsjoki, Kevo, waterfall in Čärsejohka, N-shore. Seasonally flooding beach, between stones. Coll. Martti Ohenoja 12.IX.1972, det. Inka Kuusisto 2023, conf. Kristian Hassel 2023 (TUR <http://mus.utu.fi/TBR.129040>).

Scapania paludosa (Müll.Frib.) Müll.Frib.

FINLAND. Tavastia borealis (Tb/PH), Jyväskylä, Etelä-Keljo, NW margin of Härkösuo. Eutrophic pine fen with groundwater influence. On peat. Abundant in ½ m² area.

Coll. Timo Kypärä 4222, 11.XI.2022 (OULU <http://tun.fi/GAT.2307>).

Tritomaria exsectiformis (Breidl.) Schiffn. ex Loeske
FINLAND. Satakunta (St), Sastamala, Suodenniemi, Neventausta. In a valley between lakes Palojärvi and Suodanjärvi. A much used path at the bottom of the valley. On peat. Scarce, single shoots among other bryophytes in 2 dm² area. Coll. Timo Kypärä 4212, 25.IX.2022 (OULU <http://tun.fi/GAT.2297>).

Corrections – Bryophyta

Amblyodon dealbatus (Hedw.) P.Beauv.

FINLAND. Nylandia (N/U). Historically there has been only one occurrence in N (Helsinki, Mustavuori). The occurrence has been monitored intensively since 1950's, but it hasn't been observed since 1981 even though the exact locality is known and the habitat has remained similar during the last decades (Koponen 2016). The occurrence in N is marked as extirpated.

Hymenoloma crispulum (Hedw.) Ochyra

FINLAND. Regio aboënsis (Ab/V), Kisko, Multisilta viljale, Aitsaari. South shore of the western branch of Määrijärvi lake, in Aitsaari-Riilahti area. Coll. Reino Alava 30.VI.1975 (TUR <http://mus.utu.fi/TBR.79331>). Misidentification. Specimen is *Grimmia muehlenbeckii* (det. Sanna Huttunen 2022). This was the only specimen from V, so occurrence is deleted.

Lewinskya elegans (Schwägr. ex Hook. & Grev.)

F.Lara, Garilleti & Goffinet

FINLAND. Lapponia sompiensis (Lks/SoL), Sodankylä, Jurmu NW. By roadside. Coll. Tauno Ulvinen, 2.IX.1958, conf. Tauno Ulvinen 2020 (OULU <http://id.herb.oulu.fi/GAL.7490>). The location was submerged in 1970 in Porttipahta Reservoir and the occurrence is considered to be extirpated. This is the only specimen identified in SoL so far, so occurrence is marked as extirpated.

Ptychostomum knowltonii (Barnes) J.R.Spence

FINLAND. Savonia australis (Sa/ES). No specimens found from herbaria H, OULU, TUR, KUO or JYV. Occurrence in Sa is deleted.

Corrections – Marchantiophyta

Solenostoma gracillimum (Sm.) R.M.Schust.

FINLAND. Ostrobothnia media (Om/KP), Perho, Pataanjärvenkangas nature protection area. On sandy ditch by a forest road. Coll. Turkka Korvenpää 13.IX.2013 (TUR). No specimen is found in TUR or OULU herbaria. This was the only specimen collected from Om, so occurrence is deleted.

Szygiella autumnalis

(DC.) K.Feldberg, Vána, Hentschel & Heinrichs
FINLAND. Satakunta (St). Pöytyä, Yläne, eastern part of Vaskijärvi Strict Nature Reserve. *Picea*-dominated old-growth herb-rich heath forest, on barkless sturdy rotten trunk on ground. Coll. Turcka Korvenpää 21.IX.2013 (TUR). No specimen is found in TUR. There is only one old record of *Szygiella autumnalis* in St (Pori, Sädö, Coll. Ernst Häyrén 1.VIII.1901, specimen in H), so occurrence is marked as old (observed only prior to 1940).

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References

- Artfakta 2023a: artfakta.se/artbestamning/taxon/hygrohypnum-styriacum-814. Cited in 25.5.2023.
- Artfakta 2023b: artfakta.se/naturvard/taxon/hygrohypnum-styriacum-814. Cited in 25.5.2023.
- Artfakta 2023c: artfakta.se/artbestamning/taxon/polytrichum-commune-var-perigoniale-217177. Cited 18.5.2023.
- Artfakta 2023d: artfakta.se/naturvard/taxon/tortella-alpicola-6003722. Cited in 25.5.2023.
- Artfakta 2023e: artfakta.se/artbestamning/taxon/ulota-crispa-s-lat-2558. Cited in 24.5.2023.
- Artsdatabanken 2023a: www.artsdatabanken.no/taxon/Hygrohypnum%20styriacum/104506. Cited in 25.5.2023.
- Artsdatabanken 2023b: www.artsdatabanken.no/taxon/Tortella%20alpicola/13393. Cited in 25.5.2023.
- Bakalin, V.A., Vilnet, A.A., Choi, S.S., Nguyen, V.S. 2020: Blepharostoma trichophyllum S.L. (Marchantiophyta): The Complex of Sibling Species and Hybrids. – *Plants (Basel)* 9 (11): 1423.
- Boychuk, M. & Várkonyi, G. 2022: A provisional checklist of mosses (Bryophyta) of Friendship Park (Finland). – *Memoranda Soc. Fauna Flora Fennica* 98: 51–61.
- Brotherus, V. F. 1923: Die Laubmoose Fennoskandias. – *Flora Fennica* 1: 1–635. Societatis pro Fauna et Flora Fennica.
- Caparrós, R., Lara, F., Draper, I., Mazimpaka, V. & Garilleti, R. 2016: Integrative taxonomy sheds light on an old problem: the *Ulota crispa* complex (Orthotrichaceae, Musci). – *Botanical Journal of the Linnean Society* 180: 427–451.
- Ellis, L.T., Afonina, O.M., Czernyadjeva, I.V., Konoreva, L.A., Potemkin, A.D., Kotkova, V.M., Alataş, M., Blom, H.H., Boiko, M., Cabral, R.A., Jimenez, S., Dagninog, D., Turcato, C., Minuto, L., Erzberger, P., Ezeri, T., Galaninac, O.V., Hodgetts, N., Ignatov, M.S., Ignatova, E.A., Kazanovsky, S.G., Kiebacherp, T., Köckinger, H., Korolkovar, E.O., Larráint, J., Maksimov, I.A., D. Maity, V., Martins, A., Sim-Sim, M., Monteiro, F., Catarino, L. Medina R. Nobis, M., Nowak, A., Ochyra, R., Parmikoza, I., Ivanets, V., Plášek, V., Philippe, M. Saha, P. Aziz, Md.N. Shkurko, A.V., Ștefănuț, S., Suárezai, G.M., Uygurak, A., Erkul, K., Wierzgoń, M. & Graulich, A. 2020: New national and regional bryophyte records, 63. – *Journal of Bryology* 42: 281–296.
- Guerra, J.M. 2016: Notes on the genus *Eurhynchiastrum* (Bryophyta, Brachytheciaceae) in the Iberian Peninsula. – *Nova Hedwigia* 102 (3–4): 359–365.
- Hedenäs, L. 1994: The *Hedwigia ciliata* complex in Sweden, with notes on the occurrence of the taxa in Fennoscandia. – *Journal of Bryology* 18: 139–157.
- Hedenäs, L. 2020: Disentangling Scandinavian species hidden within *Meesia uliginosa* Hedw. s.l. (Bryophyta, Meesiaceae). – *Lindbergia* 42.
- Hodgetts, N. & Lockhart, N. 2020: Checklist and country status of European bryophytes – update 2020. – *Irish Wildlife Manuals* 123: 1–214. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.
- Hodgetts N.G., Söderström, L., Blockeel, T.L., Caspari, S., Ignatov, M.S., Konstantinova, N.A., Lockhart, N., Papp, B., Schröck, C., Sim-Sim, M., Bell, D., Bell, N.E., Blom, H.H., Bruggeman-Nanenga, M.A., Brugués, M., Enroth, J., Flatberg, K.I., Garilleti, R., Hedenäs, L., Holyoak, D.T., Hugonnot, V., Kariyawasam, I., Köckinger, H., Kučera, J., Lara, F. & Porley, R.D. 2020: An annotated checklist of bryophytes of Europe, Macaronesia and Cyprus. – *Journal of Bryology* 42:1, 1–116.
- Hopkins, T. 2021: Script for searching the FinBif database for new species occurrences. – Zenodo. doi.org/10.5281/zenodo.4992434
- Ignatova, E.A., Kuznetsova, O.I., Fedosov, V.E., Ignatov, M.S. 2016: On the genus *Hedwigia* (Hedwigiaceae, Bryophyta) in Russia. – *Arctoa* 25: 241–277.
- Ignatova, E., Fedorova, A., Kuznetsova, O. & Ignatov, M. 2019. Taxonomy of the *Plagiothecium laetum* complex (Plagiotheciaceae, bryophyta) in Russia. – *Arctoa* 28: 28–45.
- Juutinen, R., Ulvinen, T. & Syrjänen, K. 2013: Suomen sammalien eliömaakunnallisen levinneisyysluettelon lisäyksiä ja poistoja 4. – *Bryobrotherella* 16: 84–106.
- Juutinen, R. & Ulvinen, T. 2014: Suomen sammalien eliömaakunnallisen levinneisyysluettelon lisäyksiä ja poistoja 5. – *Bryobrotherella* 17: 20–30.
- Juutinen, R., Ulvinen, T., Huttunen, S., Callaghan, D., Hassel, K., He, X., Häyhä, T., Ignatova, E.A., Kuitunen, T., Kypärä, T., Laitinen, T., Marsh, T., Oldén, A., Parnela, A., Syrjänen, K., Takala, T. & Virtanen, R. 2015: Suomen sammalien eliömaakunnallisen levinneisyysluettelon lisäyksiä ja poistoja 6. – *Bryobrotherella* 18.
- Juutinen, R., Ulvinen, T., Syrjänen, K., Kypärä, T., Kuitunen, T., Parnela, A., Heikkilä, R., Suoknuuti, M., Marsh, T., Arkkio, H., Xiaolan, H., Huttunen, S., Tahvanainen, T., Häyhä, T., Jääskeläinen, K. & Vainio, O. 2016: New national and regional biological records for Finland 7. Contributions to Bryophyta and Marchantiophyta. – *Memoranda Societatis Pro Fauna Et Flora Fennica* 92: 35–47. journal.fi/msff/article/view/60358
- Juutinen, R., Syrjänen, K., Huttunen, S., Kypärä, T., Sallantausta, T. & Kuitunen, T. 2017: Sammalyöryryhmä tutkimusretkellä Sallan Tuuntsassa 28.8.–1.9.2016. – *Bryobrotherella* 20: 67–85.
- Juutinen, R., Ulvinen, T., Kypärä, T., Huttunen, S., Vuorinen, K., Kuitunen, T., Parnela, A., Korvenpää, T., Syrjänen, K., Pihlaja, K., Köckinger, H., Konstantinova, N., Kestilä, A., Ervasti, E., He, X., Häyhä, T., Karttunen, K., Laaka-Lindberg, S., Tormiainen, J., Vainio, O., Vasander, H. & Vuorinen, E. 2018: New national and regional biological records for Finland 9. Contributions to Bryophyta and Marchantiophyta 8. – *Memoranda Societatis Pro Fauna Et Flora Fennica*, 94: 84–99. journal.fi/msff/article/view/76604
- Juutinen, R., Syrjänen, K., Korvenpää, T., Laitinen, T., Ahonen, I., Huttunen, S., Korvenpää, T., Kypärä, T., Parnela, A., Ryömä, R. & Ulvinen, T. 2019: Bryophyta. – In: Hyvärinen, E., Juslén, A., Kempainen, E., Uddström, A. & Liukko, U.-M. (eds.), *The 2019*

- Red List of Finnish Species, p. 157–181. Ministry of the Environment & Finnish Environment Institute. Helsinki.
- Koponen, T. 2016: Suomen Sammalseuran kevätretki 2015 Helsingin Mustavuoreen. – *Bryobrotherella* 19: 24–30.
- Koponen, T. 2021: Entosthodon obtusus ja tieteelle uusi laji, E. ulvinenii, uusina Suomelle Pisavaaran luonnonpuistosta (PeP). – *Bryobrotherella* 24: 58–66.
- Koponen, T. & Ulvinen, T. 2021: Mosses collected in Pisa Strict Nature Reserve in northern Finland by Aune and Timo Koponen in 1964–66; habitats, substrates, an estimation of frequencies and conservation. – *Bryobrothera* 12: 53–111.
- Long, D.G., Forrest, L.L., Hassel, K., Séneca, A. & Söderström, L. 2023: Typification of *Jungermannia pinguis* L. (Marchantiophyta, Aneuraceae). – *Edinburgh Journal of Botany* 80: 1–11.
- Lönnell, N. 2006: Entosthodon obtusus hedkoppmossa. – In: Nationalnyckeln till Sveriges flora och fauna. Bladmossor: Sköldmossor – blåmossor. Bryophyta: Buxbaumia – Leucobryum. p. 77. ArtDatabanken, SLU, Uppsala.
- Nyholm, E. 1968: Illustrated moss flora of Fennoscandia. II Musci. – 799 p. The Botanical Society of Lund.
- Otnyukova, T.N., Ignatova, E.A., Ignatov, M.S & Fedosov, V. E. 2004: New records of *Tortella alpicola* Dix. in Eurasia. – *Arctoa* 13: 197–201.
- Pihlaja, K., Marsh, T., Juutinen, R., Huttunen, S., Ulvinen, T., Hopkins, T., Kypärä, T., Parnela, A., Syrjänen, K., Ervasti, E., Huhta, A.-P., Vainio, O., Laaka-Lindberg, S., Kestilä, A., Maanpää, L., Kuitunen, T. & Hankonen E. 2022: New national and regional biological records for Finland 10. Contributions to Bryophyta and Marchantiophyta 9. – *Memoranda Societatis Fauna Flora Fennica* 98: 21–35. journal.fi/msff/article/view/119817
- Pihlaja, K. & Ulvinen, T. 2021: Suomen sammalien levinneisyys eliömaakunnissa 9. – Suomen ympäristökeskus. 23.6.2021. Not available on Internet, can be sent upon request.
- Pihlaja, K. & Ulvinen, T. 2023: Suomen sammalien levinneisyys eliömaakunnissa 10. – Suomen ympäristökeskus. 19.6.2023. https://www.syke.fi/fi-FI/Tutkimus_kehittaminen/Luonto/Eliotyoryhmat/Sammalyoryhma/Suomen_sammalet
- Pihlaja, K., Huttunen, S., Ulvinen, T. & He, X. 2023: Sammalet – Anthoceroophyta, Bryophyta, Marchantiophyta. – In: FinBIF 2023. The FinBIF checklist of Finnish species 2022 – Finnish Biodiversity Information Facility, Finnish Museum of Natural History, University of Helsinki, Helsinki.
- Rams, S., Ros, R.M. & Werner, O. 2006: *Tortella alpicola* (Pottiaceae) from Spain, new to Western Europe. *The Bryologist* 109(3): 404–407.
- Ryömä, R., Oldén, A., Xiaolan, H. & Laaka-Lindberg, S. 2013: Suomen puutteellisesti tunnetut maksasammalsuvut: siiransammalet *Nardia*, rahtusammalet *Cephalozia* ja pihtisammalet *Cephalozia*. – Suomen ympäristö 7/2013. 61 s. Suomen ympäristökeskus. Helsinki.
- Syrjänen, K., Ulvinen, T., Arkkio, H., Koponen, T., Pykälä, J., Rintanen, T., Sallantausta, T., Virtanen, V. & Vuorinen, E. 2004: Sammalretkeily Kaakkois-Suomeen 13.–14.9.2003. – *Bryobrotherella* 7: 38–57.
- Thiers, B. 2018: Index Herbariorum: A global directory of public herbaria and associated staff. – New York Botanical Garden's Virtual Herbarium. [Sweetgum.nybg.org/science/ih/](https://sweetgum.nybg.org/science/ih/)
- Ulvinen, T. & Syrjänen, K. 2010: Suomen sammalien eliömaakunnallisen levinneisyysluettelon lisäyksiä ja poistoja. – *Bryobrotherella* 13: 84–92.
- Ulvinen, T. & Syrjänen, K. 2011: Suomen sammalien eliömaakunnallisen levinneisyysluettelon lisäyksiä ja poistoja 2. – *Bryobrotherella* 14: 15–24.
- Ulvinen, T., Syrjänen, K. & Juutinen, R. 2012: Suomen sammalien eliömaakunnallisen levinneisyysluettelon lisäyksiä ja poistoja 3. – *Bryobrotherella* 15: 67–74.