

## Updates to the list of Estonian lichenized, lichenicolous and allied fungi

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Sixteen species are reported as new for Estonia. Among these species, ten are lichenized and six are lichen-habiting fungi. One lichen-habiting species – *Bryostigma molendoi* (Heufl. ex Arnold) S.Y. Kondr. & Hur (= *Arthonia molendoi* (Heufl. ex Arnold) R. Sant.) and one lichenized species – *Lecania nylanderiana* A. Massal. should be excluded from the Estonian list of lichenized and allied fungi as misidentifications. New locality data are given for two critically endangered (CR) lichens last found more than 45 years ago – *Hypogymnia vittata* (Ach.) Parrique and *Nephroma bellum* (Spreng.) Tuck. (Lõhmus et al., 2019). Additional information on the distribution in Estonia is provided for recently described *Toniniopsis separabilis* (Nyl.) Gerasimova & A. Beck (Gerasimova et al., 2021).

DNA was extracted from some specimens to confirm identifications. For extraction, High pure PCR Template Preparation Kit (Roche Applied Science®) or alkaline lysis method described for example in Voitk et al. (2020) was used. The internal transcribed spacer (ITS) region was amplified using the primer pair ITS0F / LA-W (Teder-soo et al., 2008). DNA was amplified, purified, and sequenced following the protocols described in Voitk et al. (2020). The extracted DNA is deposited in the DNA and Environmental Sample Collection of the Natural History Museum of the University of Tartu (TUE). The new DNA sequences are publicly available under UDB-codes in PlutoF work bench (<https://plutof.ut.ee>) and in eElurikkus data portal (<https://elurikkus.ee>). A blast search (Altschul et al., 1990) was used to

compare new sequences with those deposited in GenBank. To ascertain determinations, the most similar sequences were downloaded, aligned using MUSCLE (Edgar, 2004) and clustered using PhyML (Guindon et al., 2010) in SeaView ver. 4.7. (Gouy et al., 2010).

The abbreviations of the country regions and frequency classes follow Randlane & Saag (1999): (1) the country regions: NE – northeastern part, NW – northwestern part, SE – southeastern part, SW – southwestern part, WIs – Western islands; (2) frequency classes (Freq.): rr – very rare, 1–2 localities, r – rare, 3–5 localities, st r – rather rare, 6–10 localities, fq – frequent, 21–50 localities. The cited specimens are kept in the fungarium of the Natural History Museum and Botanic Garden, University of Tartu (TUF), in the lichen collection of the Tallinn Botanic Garden (TALL) or in the herbarium of the Euroacademy (ICEB; deposited in TUF).

*ACAROSPORA FUSCA* B. de Lesd. – WIs: Saare Co., Saaremaa Island, Saaremaa comm., Türju village (57.97791°N, 21.99602°E), alvar grassland, on erratic boulder, together with *Protoparmeliopsis muralis* and *Lecanora dispersa*, leg. I. Jüriado 7 July 2020, det. I. Jüriado & A. Suija 14 Oct 2021 (TUF092070.a; UDB0818903). Freq.: rr.

*Acarospora fusca* was described from France and reported later from a few other European countries (Knudsen et al., 2021). The identity of this species remained unclear as the type material was destroyed during the Second World War (Westberg et al., 2011). However, only recent-

ly, the molecular analyses using several DNA markers confirmed that the species belongs to genus *Acarospora*, the neotype was established and the consideration of *A. fusca* as a synonym of *Myriospora rufescens* was rejected (Knudsen et al., 2021). The species is not easily noticed as the areoles are usually 0.5 or less millimetres in diameter and by morphology it could be mistaken with *A. veronensis* (Maliček et al., 2021). *Acarospora fusca* grows usually in lowlands in well-lit or sun exposed habitats on granite, sandstone and schist, also in anthropogenic substrates as wood or tile (Knudsen et al., 2021). The determination of the Estonian specimen was confirmed using comparison of fungal ITS sequences and phylogenetic clustering. The closest hits (percentage of identity close to 100%) were MT809051 (*A. fusca*, from neotype), LN810758 and LN810759 (both annotated as *A. anomala*).

# BRYOSTIGMA PARIETINARIUM (Hafellner & Fleischhacker) S.Y. Kondr. & Hur (= *Arthonia parietinaria* Hafellner & Fleischhacker) – Selected specimens: SE: Tartu Co., Tartu comm., ruins of Kärkna monastery (58.460141°N, 26.65398°E), on *Xanthoria parietina* on twig of *Padus avium*, leg. & det. A. Suija (TUF091568.a); Tartu, at the Anne canal (58.3745°N, 26.7410°E), on *X. parietina* on twig of *Quercus robur*, leg. J. Liira 24 March 2018, det. A. Suija (TUF056871.a). Freq: st fq.

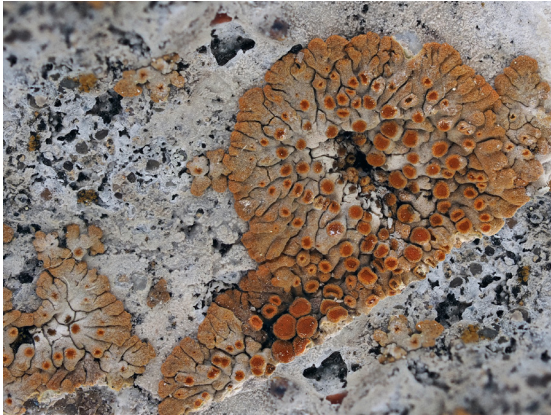
After revision of the *B. molendoi* (Heufl. ex Arnold) S.Y. Kondr. & Hur material deposited in TUF, it appeared that the species was mistaken for recently described *B. parietinarium* (Fleischhacker et al., 2016). *Bryostigma parietinarium* differs from *B. molendoi* by forming larger infection spots with more than 20 ascomata per spot (1–5, rarely 10 in *B. molendoi*) and by stronger (darker) pigmentation of the ascomatal structures (Fleischhacker et al., 2016). The species is rather frequent in Estonia (see: <https://elurikkus.ee/bie-hub/species/729359#overview>; accessed Sep 2021), known all over the Estonian mainland, but not reported yet from islands.

CALOGAYA PUSILLA (A. Massal.) Arup, Frödén & Söchting – Distr.: NW, NE, SE, WIs. Freq.: fq. – In the national checklist, the taxon has earlier been a separate species under the name *Caloplaca pusilla* (A. Massal) Zahlbr. (Trass, 1970) and later incorporated into *Caloplaca saxicola*

(Hoffm.) Nordin (Randlane & Saag, 1999), which is now combined under the name *Calogaya saxicola* (Hoffm.) Vondrák (Vondrák et al., 2016). *Calogaya pusilla* has been recently separated again on some characteristic morphological traits: yellow or orange rosette-forming thallus (up to 2 cm in diam.) which is whitely pruinose, with rather long (up to 1.5 mm) marginal lobes and scattered or crowded apothecia (Stenroos et al., 2016). The taxon is monophyletic according to the analyses of ITS dataset (Gaya et al., 2011; Vondrák et al., 2018). *Calogaya saxicola* has smaller rosettes (up to 1 cm in diam.) and shorter lobes (up to 0.8 mm), its thallus lacks pruina and apothecia are often crowded (Stenroos et al., 2016). Based on these phenotypic characters, the herbarium material of *C. saxicola* in TUF has been revised and numerous samples re-identified as *C. pusilla* (Fig. 1). The species is common in Estonia, recorded in four regions out of five (but probably distributed all over the country); it inhabits calcareous substrata, mainly limestone rocks, mortar and stone walls, rarely also old wood (TUF068063). The specimens that remained under *C. saxicola* in TUF (rosette, epruinose thallus with shorter or not clear lobes, growing either on calcareous substrate or granite boulders) (Fig. 2) are treated here as *C. saxicola* s. lat. Phenotypically defined *C. saxicola* species complex has been shown to form several lineages in phylogenetic trees and the taxonomic status of these lineages has remained unresolved (Vondrák et al., 2018). Furthermore, not much of the European material of the species complex has been subjected to DNA analyses (Gaya et al., 2011; Westberg et al., 2021), and thus applying the name *Calogaya saxicola* s. lat. for phenotypically identified samples seems the best solution for present.

Specimens examined (det. T. Randlane). NW (Harju Co., Kaberneeme: TUF002141, TUF016472, Naissaar: TUF016452, Pirta: TUF016463, TUF016464, TUF068076, Salmistu: TUF016470, TUF016471; Lääne Co., Noarootsi: TUF016476, TUF016477, Osmussaar: TUF016453, Vormsi: TUF016441, TUF016442, TUF016444, TUF016446, TUF016447, TUF016449), NE (Lääne-Viru Co., Rakvere: TUF016468, Viru-Nigula: TUF080501.a), SE (Tartu Co., Melliste: TUF016480, Tartu: TUF016473; Valga Co., Helme: TUF016482), WIs (Hiiumaa Co., Hanikatsi: TUF068063, Hiiumaa:

TUF016431, Hõralaid: TUF023722, Langekare: TUF027790, Saarnaki: TUF016430; Saare Co., Saaremaa: TUF016437, Vilsandi: TUF016432, TUF016433, TUF016434).



**Fig. 1.** Rosette-forming thallus of *Calogaya pusilla* (TUF016431) with clearly visible white pruina, long marginal lobes and separate apothecia. Photo A. Saag.



**Fig. 2.** Thallus of *Calogaya saxicola* (TUF068062) with short marginal lobes and crowded apothecia, but lacking pruina. Photo A. Saag.

CLADONIA DIVERSA Asperges ex S. Stenroos – NW: Harju Co., Tallinn, Aegna Island, group of erratic boulders within dry pine forest (59.58217°N, 24.77271°E), over the layer of bryophytes and humus on erratic boulder, leg. I. Jüriado & A. Meltsov 1 July 2021, det. I. Jüriado & A. Suija 4 Oct 2021 (TUF091699; UDB0818904). Freq.: rr.

*Cladonia diversa* is comparatively little known but widespread in Europe and Macaronesia, especially in oceanic areas. It is characterised by up to 3 cm tall scyphose podetia, the scyphi are usually narrow, gradually flaring, pale greenish or pale grey and orange at dying base. Podetia are densely covered by microsquamules and granules, apothecia are red (Ahti & Stenroos, 2013; Stenroos et al., 2016). The species could resemble and is chemically similar to *C. coccifera* and *C. pleurota* but is recognized by slender and narrower scyphi covered abundantly by tiny microsquamules. The ITS sequence is identical or almost identical to those *C. diversa* sequences deposited in GenBank (e.g. HE611169, KU053047, MK179557). *Cladonia diversa* grows on humus and mineral soil over rocks and rock outcrops, often on mossy seepages along shores (Ahti & Stenroos, 2013; Stenroos et al., 2016).

# DIDYMOCYRTIS EPIPHYSCIA Ertz & Diederich – SE: Tartu Co., Tartu comm., ruins of Kärkna monastery (58.4601°N, 26.6539°E), on *Xanthoria parietina* on twig of *Padus avium*, leg. A. Suija & M. Suija 25 Apr 2021, det. A. Suija (TUF091569.a); Tartu, Ropka-Ihaste Nature Reserve, Emajõe flooded meadow (58.36584°N, 26.7508°E), on *X. parietina* on twig of *Salix* sp., leg. M. Suija 31 July 2020, det. A. Suija (TUF089865.a). Freq.: rr.

According to Ertz et al. (2015), the *Didymocyrtis* specimens on *Physcia adscendens*, *P. tenella* and *Xanthoria parietina* are genetically identical to each other even if the conidia of those specimens that grow on *Physcia* spp. are constantly slightly broader. We did not try to extract DNA from the cited specimens because the material is not rich. However, the size of the pycnidia (up to 180 µm) and conidia (5–(5.42 ± 0.47)–6 × 2–(2.62 ± 0.43)–3 µm; length/breadth ratio=1.6–2.5; n=12) exclude the possibility that the specimens belong to *D. slaptonensis* Vain., another species that inhabits *X. parietina* and which conidia are longer and slender i.e (5)–6–8(–9) × 2.5–3.5 µm (Ertz et al., 2015).

HYDROPUNCTARIA SCABRA (Vězda) C. Keller, Gueidan & Thüs – NW: Harju Co., Saue comm., Vasalemma river (59.1670°N, 24.4733°E), on inundated granite stone, leg. M. Schmeinmann & A. Suija 23 July 2011, det. A. Suija Oct 2020 (TUF091234.a). Freq.: rr.

This is an occasional species in Europe that differs from *H. rheitrophila* by somewhat papillate thallus, by perithecia which involucrellum reaches down to the base and forms black basal layer when involucrella of adjacent perithecia fuse and by somewhat bigger ascospores (more details in Orange et al., 2009; Thüs & Schultz, 2009). The size range of the ascospores of the examined specimen is 14–16 × 6–7 µm.

HYPOGYMNIA VITTATA (Ach.) Parrique – NE: Järva Co., Türi comm., Kolu (58.81197°N, 25.25987°E), on bark of old *Betula* sp. in *Myrtillus* type forest, leg. L. Marmor-Ohtla 26 June 2021, det. L. Marmor-Ohtla 7 July 2021 (TALL L009116; UDB0818905).

The identification of *H. vittata* was confirmed by the negative Pd reaction of the medulla and the identity of ITS sequence. The last documented finding of the species in Estonia originates from the year 1965 when it was found in Võru Co., Setumaa comm. (TUF011119, TUF011120). There are also historical records from Tallinn and the vicinity from the end of the 19th/beginning of the 20th century (Trass & Randlane, 1994).

LECANIA SUAVIS (Müll. Arg.) Mig. – SW: Viljandi Co., Viljandi comm., Porsa village, Tarvastu church (58.230099°N, 25.884383°E), on the church wall, mortar, leg. I. Jüriado 26 July 1996, det. I. Zhdanov, Feb 2012, previously determined as *L. nylanderiana* (TUF025450); Pärnu Co., Lääneranna comm., Rannaküla (58.430119°N, 23.690394°E), on mortar of old building, leg. I. Jüriado 8 Aug 2020, det. I. Jüriado 14 Oct 2021 (TUF092184); Wis: Saaremaa Co., Saaremaa comm., Muhu Island, Liiva village, Muhu church (58.604043°N, 23.226307°E), on the church wall, mortar, together with *Xanthocarpia lactea*, leg. T. Randlane 12 June 1984, det. I. Zhdanov Feb 2012, previously determined as *L. nylanderiana* (TUF009119). Freq.: r.

This species differs from most other species of *Lecania* by having 3-septate ascospores. Often confused with *L. nylanderiana* because this species also has 3-septate ascospores and both species grow on calcareous or anthropogenic substrates. However, these species are clearly different by morphology of thallus and apothecia. *Lecania nylanderiana* is characterized by thin, smooth, areolate thallus and mostly flat, rarely convex apothecia with permanent thalline margin, whereas *L. suavis* has uneven,

convex-areolate or warted thallus and apothecia which become early strongly convex to semi-globose, with soon excluded thalline margin. In addition, *L. suavis* is characterized by longer and narrower ascospores (13–20 × 3–4.5 µm) than *L. nylanderiana* (12–16 × 4–5 µm). As all samples of *L. nylanderiana* known in Estonia we re-identified as *L. suavis*, the former taxon must be excluded from the Estonian checklist.

*Lecania suavis* is widely distributed, for example, in Great Britain and Sweden (Westberg et al., 2021; Fletcher et al., 2009), and is probably widely distributed throughout Europe. For Estonia, the nearest records are in Finland (Westberg et al., 2021), Russia (Republic of Karelia, Moscow and Vladimir Regions; Zhdanov & Volosnova, 2012) and Lithuania (Motiejūnaitė, 1999).

# LICHENOCHORA PHYSICICOLA (Ihlen & R. Sant.) Hafellner – SE: Tartu Co., Tartu comm., ruins of Kärkna monastery (58.4601°N, 26.6539°E), on *Physcia adscendens* on twig of *Padus avium*, leg. A. Suija & M. Suija 25 Apr 2021, det. A. Suija (TUF091570.a, TUF091568.c, TUF091569.d). Freq.: rr.

This species forms characteristic galls with sunken perithecia on the thallus of *Physcia* spp.; the ascospores of the specimen are 2-celled, more or less symmetric in shape, 10–12.5 × 7–8 µm (n=5), the asci are cylindrical in shape and the wall of the ascoma turns K+ green. This is the second *Lichenochora* species for Estonia. Another species – *L. obscuroides* (Linds.) Triebel & Rambold (Randlane & Saag, 2004) grows mainly on *Phaeophyscia* spp.

NEPHROMA BELLUM (Spreng.) Tuck. – NE: Lääne-Viru Co., Vinni comm., Kõrma, Sirtsu Nature Reserve (59.27489°N, 26.72909°E), on bark of a deciduous tree in an old *Dryopteris* type forest, leg. L. Rennel 28 March 2020, det. P. Lõhmus, Nov 2020 (TUF091316; UDB0781138); NW: Harju Co., Anija comm., Vetla, Kõrvemaa Landscape Protection Area (59.21334°N, 25.46181°E; 59.21482°N, 25.47004°E; 59.21515°N, 25.47132°E), respectively two first specimens on bark of *Salix* sp., and the third on bark of *Populus tremula* fallen tree in old *Hepatica* type forests, leg. & det. L. Marmor-Ohtla, 2 July 2021 (TALL L009129, TALL L009131, TALL L009132); SE: Valga Co., Tõrva comm., old pinewood near Holdre village (57.960325°N, 25.701354°E), on dead trunk of *Salix* sp. (TUF049203) and

on branches of *Lonicera xylosteum*, leg. P. Lõhmus, 8 Apr 2020, det. P. Lõhmus Nov 2020. (TUF091317; UDB0781139).

The identification of *Nephroma bellum* was confirmed by the K<sup>+</sup> yellow reaction of the medulla. The previous documented finding of the species in Estonia originates from the year 1977 when it was found in Viljandi Co., Viljandi comm. (TUF027901.b). According to literature, the species has also been found in 1948 in Tallinn (Trass & Randlane, 1994).

POLYBLASTIA ABSCONDITA (Nyl.) Arnold – NW: Rapla Co., Kullamaa comm., Laukna village, Iganõmme Pakamägi (58.929205°N, 24.186474°E), on limestone cliff, together with *Sagiolechia protuberans*, leg. A. Suija & M. Suija 27 July 2021, det. A. Suija (TUF091677; UDB0818906). Freq.: rr.

This species is often mistaken for *Polyblastia albida* Arnold or *P. cupularis* A. Massal. in Scandinavia (Savić & Tibell, 2012), and for now the latter has been excluded from the Fennoscandian checklist (Westberg et al., 2021). *Polyblastia albida* and *P. abscondita* both have immersed to semi-immersed ascomata, but the ascospores of *P. albida* are smaller – 23–29 × 11.5–14 µm (Tibell & Tibell, 2017) vs. 28–45 × 15–23 µm (Foucard, 2001; Nimis & Martellos, 2021). The spores of the Estonian specimen are 31–38 × 20–21 µm (n=6). According to Savić et al. (2008), *P. abscondita* is not a true *Polyblastia* but belongs to *Thelidium*-clade. The most similar DNA sequences to UDB0818906 are EU553514 and EU553507 (99.9% similarity).

# RHAGADOSTOMA BREVISPORUM (Nav.-Ros. & Hladun) Nav.-Ros. – NW: Tallinn, Nõmme, Männiku 1 (59.361487°N, 24.714275°E), on *Peltigera rufescens*, leg. L. Martin 31 July 1998, det. A. Suija 21 May 2021 (ICEB 13025).

The species forms characteristic infection spots mainly on thalli *P. rufescens* (Puolasmaa et al., 2012). The perithecioid ascomata are relatively big and globose; the asci of the cited specimen are cylindrical in shape in dimensions of c. 90 × 10–15 µm and contain four large 1- to 2-celled ascospores in dimensions of c. 35 × 6–7 µm.

# SCLEROCOCCUM SIMPLEX D. Hawksw. – SE: Valga Co., Tõrva comm., Karjatnurme village, Rubina Nature Reserve, Rubina bog (58.05132°N, 25.79332°E), on *Ochrolechia szatalaënsis* grow-

ing on *Pinus sylvestris*, leg. & det. A. Suija June 2018 (TUF051053.a). Freq.: rr.

*Sclerococcum simplex* forms dark brown sporodochia with 0–1-septate conidia on thalli of corticolous *Pertusaria* (e.g. Etayo & Calatayud, 1998) and *Ochrolechia* (Joshi et al., 2017).

SCYTINIUM FRAGILE (Taylor) Otálora, P.M. Jørg. & Wedin – NW: Harju Co., Türisalu alvar (59.406812°N, 24.324722°E), on limestone, leg. L. Martin 14 Sep 2013, det. L. Martin 7 Feb 2021 (ICEB 13163); WIs: Lääne Co., Vormsi island, Rumpo peninsula (58.955720°N, 23.309270°E), alvar, on limestone pebble, leg. L. Martin 9 Oct 1999, det. L. Martin 7 Feb 2021 (ICEB 272, 9414). Freq.: rr.

The species has rather small rosette-like or cushion-forming thallus (diam. up to 2 cm) with whitish pubescence around the apices of young lobes; the older parts of the lobes become rugose and covered with globose isidia (Gilbert et al., 2009). The species is mainly distributed in Great Britain (Scotland and Wales), Ireland and southern Europe (Gilbert et al., 2009); Estonian records are probably on the northern limit of *S. fragile* distribution area – the northernmost locality of this species known so far was the Isle of Raasay in Scotland (57°24'N, 6°02'W).

# STIGMIDIUM HAGENIAE (Rehm) Hafellner – WIs: Saare Co., Muhu island, Liiva village, near Muhu church (58.60376°N, 23.22569°E), on *Anaptychia ciliaris* on stone fence, leg. L. Kankukene 23 July 1969, det. A. Suija 22 March 2021 (TUF091524).

The hyaline, 2-celled ascospores in dimensions of 11–13 × 4–4.5 µm and the asci c. 35 × 15 µm are in concordance with the description given e.g. in Brackel & Döbbeler (2020).

TONINIOPSIS DISSIMILIS Gerasimova & A. Beck. – NE: Jõgeva Co., Jõgeva comm., Oti village (58.9033°N, 26.7108°E), mesotrophic boreal forest, on *Populus tremula*, leg. P. Lõhmus 14 Sep 2014, det. J. Gerasimova 2021 (TUF092131); SE: Valga Co., Otepää comm., Sarapuu village (57.8867°N, 26.3881°E), *Aegopodium* boreal-nemoral forest, on *P. tremula*, leg. P. Lõhmus 10 July 2014, det. J. Gerasimova 2021 (TUF092130). Freq.: rr.

*Toniniopsis dissimilis* is characterized by a wrinkled to warted to subsquamulose thallus;

grey-brown to dark brown apothecia, commonly with a lighter margin, and a dark brown hypothecium, frequently gradually merging into the coloration of the exciple below (Gerasimova et al., 2021, Fig. 2A & C, 3A, C & E, 4A).

The specimens observed have bacilliform spores of size 18–22  $\mu\text{m}$  long and 3.0–3.5  $\mu\text{m}$  wide with (1–)3(–4) septa and exciple without enlarged lumina cells along the rim. *Toniniopsis dissimilis* is similar to *T. separabilis* but differs in thallus structure and colour of hypothecium, which is barely separated from the exciple below.

TONINIOPSIS SEPARABILIS (Nyl.) Gerasimova & A. Beck. – The species was recently recorded as new for Estonia (Gerasimova et al., 2021), here we present additional localities of this taxon. NW: Harju Co., Kuusalu comm., Pala village (59.3627°N, 25.9082°E), drained peatland forest, on *Populus tremula*, leg. P. Lõhmus, 12 Aug 2014, det. J. Gerasimova 2021 (TUF092134); NE: Jõgeva Co.; Põltsamaa comm., Pikknurme village (58.6303°N, 26.2251°E), *Aegopodium* boreal-nemoral forest, on *P. tremula*, leg. P. Lõhmus 11 June 2014, det. J. Gerasimova 2021 (TUF092136); SW: Pärnu Co., Saarde comm., Mustla village (58.1224°N, 25.0914°E), *Aegopodium* boreal-nemoral forest, on *P. tremula*, leg. P. Lõhmus 19 Aug 2014, det. J. Gerasimova 2021 (TUF092132); SE: Tartu Co., Tartu comm., Siniküla (58.5286°N, 26.3559°E), *Aegopodium* boreal-nemoral forest, on *P. tremula*, leg. P. Lõhmus 7 July 2014, det. J. Gerasimova 2020 (TUF092133.a); Valga Co., Valga comm., Rampe village (57.9001°N, 26.2246°E), mesotrophic boreal forest, on *P. tremula*, leg. P. Lõhmus 10 July 2014, det. J. Gerasimova 2021 (TUF092135). Freq.: st r.

*Toniniopsis separabilis* is characterized by a thallus consisting of single or contiguous  $\pm$ loose granules, often forming short, coralloid, isidium-like bulges; pale orange, grey-brown, dark brown to black apothecia, and thin dark brown hypothecium, easily separated from the exciple below. The rim and lateral part of the exciple often contain either a blue, brown or mixed blue-brown colour in the upper part or along the whole margin (Gerasimova et al., 2021, Figs 2B & D, 3B, D & F, 4B, 5).

The specimens observed are characterized in having bacilliform spores, 18–42  $\mu\text{m}$  long and 2.5–3.5  $\mu\text{m}$  wide with (0–)3(–7) septa and exciple

with one to three enlarged lumina cells along the rim, 2.0–5.5  $\mu\text{m}$  wide and 6–11  $\mu\text{m}$  long. *Toniniopsis separabilis* is closely related to, and easily confused with *T. dissimilis* (see description above).

XYLOGRAPHA RUBESCENS Räsänen – NW: Rapla Co., Märjamaa comm., Rangu village, (58.9621°N, 24.3754°E), alvar forest, on wood of lying trunk of *Pinus sylvestris*, leg. P. Lõhmus 26 May 2019, det. A. Suija 12 May 2021 (TUF048843; UDB0799951). Freq.: rr.

*Xylographa rubescens* was previously considered as a chemical variant of *X. parallela* (Ach.) Fr. containing norstictic (K<sup>+</sup> red) in addition to stictic acid. The molecular phylogenetic analysis, however, showed that *X. rubescens* is not even closely related to *X. parallela* (Spribille et al., 2014). Another norstictic acid containing species known in Estonia is *X. opegraphella* Nyl. (Randlane, 2006) but the ascospores of this species are narrower, i.e. 3.4–3.9  $\mu\text{m}$  vs. 5.5–6.7  $\mu\text{m}$  (Spribille et al., 2014). The DNA sequence (UDB0799951) closest match was KJ462315 (percentage of identity 99.83%).

XYLOGRAPHA TRUNCISEDA (Th. Fr.) Minks ex Redinger – Ws: Hiiu Co., Reigi comm., Ojaküla (58.91502°N, 22.1757°E), alvar forest, on wood of lying *Picea abies*, leg. P. Lõhmus 9 July 2019, det. A. Suija 9 Aug 2021 (TUF048715; UDB0802656). Freq.: rr.

The species was included in the second checklist of lichens, lichenicolous and allied fungi (Randlane & Saag, 1999) but excluded as misidentification (Randlane, 2006). The determination of the cited specimen was confirmed besides morphology also by the comparison of ITS sequences. The closest matches were KJ462329 (percentage of identity 100%), KJ462328 (99.12%) and KJ462330 (98.76%).

## ACKNOWLEDGEMENTS

Rasmus Puusepp and Mihkel Suija are thanked for lab work, Mari Müür for databasing and technical assistance in curating the specimens in TUF, and Andres Saag for photographing. Most of the new material was collected and determined in the framework of the projects “Enhancing the conservation performance of protected forest fragments” (State Forest Management Centre, LLTOM18470); “Implementation of action plans

for birds (part 6: The impact of Black stork as umbrella species)” (Estonian Environmental Board) and “Conservation status of Estonian forest lichens” (Estonian Environmental Board, SLTOM19051). The field work on Aegna Island by Inga Jüriado was financed by the project no. 17332 of the Environmental Investment Centre (KIK). The lab work was funded by the European Regional Development Fund (Centre of Excellence EcolChange) and by Estonian Research Council grant (PRG1170). Julia Gerasimova was supported by a BAYHOST fellowship from the Bayerische Staatsministerium für Bildung und Kultus, Wissenschaft und Kunst.

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