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Finnish aphyllophoroid and heterobasidioid fungi (Basidiomycota): a supplemental report of their biogeography

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Abstract

Knowledge of the distribution and occurrence of aphyllophoroid and heterobasidioid fungi in Finland is continuously expanding. Here, we present 26 species new to Finland: *Amylocorticium laceratum* (Litsch.) Hjortstam & Ryvarden, *Artomyces piperatus* (Kauffman) Jülich, *Basidiodendron glaucum* Spirin & K.H. Larss., *Basidiodendron globisporum* Spirin & Malysheva, *Clavariadelphus mucronatus* Wells & Kempton, *Clavulina perplexa* E. Campo, Franchi & M. Marchetti, *Clavulina reae* Olariaga, *Dichostereum effuscatum* (Cooke & Ellis) Boidin & Lanq., *Elaphocephala iocularis* Pouzar, *Gloeocystidiellum kenyense* Hjortstam, *Helicogloea pellucida* Spirin & Malysheva, *Hirticlavula elegans* J.H.Petersen & Læssøe, *Lindtneria leucobryophila* (Henn.) Jülich, *Luellia furcata* K.H.Larss. & Hjortstam, *Myxarium crystallinum* D.A.Reid, *Myxarium fugacissimum* (Bourdot & Galzin) Malysheva & Spirin, *Myxarium grilletii* (Boud.) D.A.Reid, *Myxarium minutissimum* (Höhn.) Spirin & Trichies, *Paullicorticium globosum* Oberw., *Polyozellus flavovirens* (Höhn. & Litsch.) Svantesson & Kõljalg,

Protoacia delicata V. Spirin & V. Malysheva, *Ramariopsis hirtipes* (Fr.) Corner, *Repetobasidium conicum* (Oberw.) J. Eriksson & Hjortstam, *Serendipita vermifera* (Oberw.) P. Roberts, *Thujacorticium zurhausenii* (Bres.) Nakasone, and *Tretomyces lutescens* (J. Erikss. & Ryvarden) K.H. Larss., Kotir. & Saaren. We also report 132 new records of 79 rare or seldom collected species, and 137 species new to a specific subzone of the boreal forest vegetation zone in Finland. These records contain notes on the substrata and the ecology and distribution of the species new to Finland are briefly discussed.

Introduction

Understanding the occurrence of aphyllophoroid and heterobasidioid fungi in Finland is continuously improving. The latest national checklist includes 1 061 species (Miettinen et al. 2024), while the first checklist in 2009 comprised 980 species (Kotiranta et al. 2009). However, due to ongoing taxonomic revisions, the number of species is continually changing. Furthermore, extensive species inventories performed annually in Finland have accumulated knowledge of the distribution and ecology of all aphyllophoroid fungi. Updates of new records regarding 461 species have been published regularly (e.g. Kunttu et al. 2016a, 2018, 2019, 2021).

The accumulation of records reveals the habitat requirements of rare species, which is essential information for conservation planning and improving forest management measures. A more precise understanding of the ecology and taxonomy of aphyllophoroid fungi enhances opportunities for species protection.

In this paper, we present new records of aphyllophoroid and heterobasidioid fungi in Finland, where we consider three types of records: 1) species new to Finland, 2) rare or seldom collected species with a maximum of 10 previous records (locations) in Finland, and 3) species that are new to a specific subzone (section) of the boreal vegetation zone in Finland.

This study includes both aphyllophoroid and heterobasidioid fungi in a broad sense, following Hansen and Knudsen (1997), except for the exclusion of gastromycetoid genera. Although we concentrated mainly on corticioid fungi, we also added the heterobasidioid genera (such as *Helicogloea* Pat., *Spiculogloea* P. Roberts, and *Tulasnella* J. Schröt.), since they were included in the Finnish checklist of aphyllophoroid fungi (Kotiranta et al. 2009).

Material and methods

While most data in this paper were collected by the authors during field trips and species inventories, some old herbarium specimens were also examined. For example, records came from several inventory projects, including surveys of herb-rich forests in Kainuu (ELY-Centre), Kulla Nature Reserve (Kone Foundation), dead wood in Rovaniemi (Natural Resources Institute Finland, Luke), pine dead wood in riparian settings (Vuokon Luonnonsuojelusäätiö), and kelo trees (University of Eastern Finland). A standard inventory involved opportunistic species sampling, requiring careful surveying for visible basidiocarps. Emphasis was placed on sampling multiple habitats and substrate qualities to collect a large number of species and to obtain a representative picture of the species composition of the study site.

Most records date from 2021 to 2023, but older records were also included. At the beginning of each fungal record, we provide the biogeographical provinces according to Knudsen and Vesterholt (2008), and Latin province names are presented on the website of FinBIF (2024a) alongside this provincial division. For each record, we named the sites at two or three levels: a municipality, a village, or a topographical site, or nature conservation area. If a fungal species' biogeographical province matched that of a previous record, it was not repeated. ETRS-TM-35FIN was used to present the coordinates. ETRS refers to the European Terrestrial Reference System. The forest vegetation subzones (**Fig. 1**) follow Ahti et al. (1968), and are also available on the online FinBIF map (FinBIF 2024b). Following the abovementioned sources, the names of the subzones were presented in English (e.g. Ostrobothnia), in contrast to the

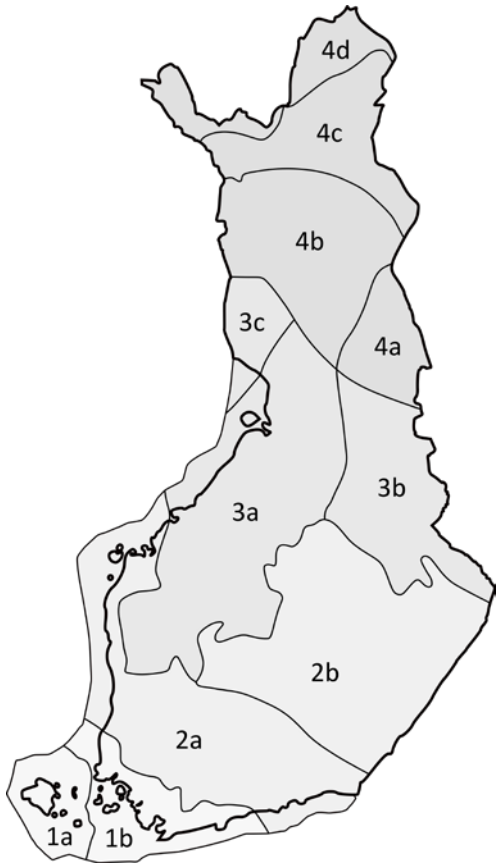

Fig. 1. Boreal forest vegetation zones (1–4) and their subzones in Finland. 1a – Hemiboreal, Åland; 1b – Hemiboreal, Oak zone; 2a – Southern boreal, Southwestern Finland, and Southern Ostrobothnia; 2b – Southern boreal, Lake district; 3a – Middle boreal, Ostrobothnia; 3b – Middle boreal, Northern Carelia – Kainuu; 3c – Middle boreal, Southwestern Lapland; 4a – Northern boreal, Kuusamo District; 4b – Northern boreal, North Ostrobothnia; 4c – Northern boreal, Forest Lapland; 4d – Northern boreal, Fjeld Lapland.

Latin names that were used for the biogeographical provinces (e.g. Ostrobottnia).

The taxonomy and nomenclature mainly follow Kotiranta et al. (2009), Hjortstam and Ryvarden (2009), Bernicchia and Gorjón (2010), and Larsson and Ryvarden (2021). Additionally, Spirin et al. (2019a) was used for the genus *Protomerulius*, and Spirin et al. (2020, 2021a) for the genus *Basidiodendron.* Moreover, we used Spirin et al. (2019b, 2021b) for the genera *Helicogloea* and *Sistotremastrum,* respectively. Similarly, Spirin et al. (2018a) was used for the genera *Myxarium, Protoacia,* and *Protodontia,* while we followed Svantesson et al. (2019, 2021) for the genus *Polyozellus*. The Red List of Finnish species assessment according to the IUCN-standard corresponds to Kotiranta et al. (2019). If a species status was determined to be of least concern (LC), it was not mentioned. In addition, the species that have not been included in the latest Finnish Red List assessment are without any status. The sequenced specimens are marked with the asterisk (*).

The decay stage classification (1–5) of dead wood was carried out according to Renvall (1995), with stage 1 referring to hard dead wood and stage 5 referring to completely decayed wood. The diameter of dead wood was measured at chest height if the trunk was complete and from the middle if it was broken. Here, we use the Finnish term "kelo" to refer to dead and old-growth trunks of Scots pine *(Pinus sylvestris* L.) with a silvery-grey, decorticated appearance. Kelo trees are special substrata for fungi due to their prolonged decay rate (up to hundreds of years), long-lasting hard surface, and chemical compounds (Leikola 1969, Niemelä et al. 2002, Venugopal et al. 2016). The classification of habitat types follows, to a large extent, the Red List assessment of habitat types in Finland (Kontula & Raunio 2018).

The material was collected, identified, and confirmed by several mycologists as described in the record details, using the following abbreviations: TH=Teppo Helo, PJ=Pauli Jokikokko, JJ=Jari Julkunen, TK=Tapio Kekki, MK=Matti Kulju, PK=Panu Kunttu, KHL=Karl-Henrik Larsson, HL=Hannu Lehtonen, OM=Otto Miettinen AM=Aki Moilanen, JP=Jorma Pennanen, AS= Anton Savchenko, VS=Viacheslav Spirin, MV=Maarit Vainio, PV=Pyry Veteli, and HV=Henry Väre. The code after the name of the collector represents the personal sampling number of the specimen. Voucher specimens were deposited in the herbaria of the universities of Helsinki (H), Oulu (OULU), Turku (TUR), University of Tartu Natural History Museum (TU) or in the reference herbaria of Jari Julkunen (J.J.) or Joni-Matti Kusmin (J.-M.K.).

Results

We discovered 26 fungal species new to Finland. Furthermore, 132 new records (locations) of 79 rare or seldom collected species (with a maximum of ten previous records in Finland) are presented. Altogether, 137 species were reported as new to a specific subzone (also called a section) of Finland's boreal forest vegetation zone.

The species are listed below in alphabetical order.

Amylocorticium cebennense (Bourdot) Pouzar

Fig. 2

DISTRIBUTION: New to 4c.
SPECIMEN EXAMINED: Regio Kuusamoënsis, Salla, Hirvasjoki, 7517483 N, 610781 E, on a whole fallen trunk of *Pinus sylvestris* (diam. 30 cm, decay stage 2–3) in a *Pinus sylvestris*-dominated old sub-xeric heath forest, 11 Jul 2022, leg. & det. JJ1812 (OULU), conf. MK.

Amylocorticium laceratum (Litsch.) Hjortstam & Ryvarden

DISTRIBUTION: New to Finland, and hence new to 3b.
SPECIMEN EXAMINED: Savonia borealis, Lapinlahti, Älänne, Tiilikanjoki, 7037367 N, 555516 E, on an old *Pinus sylvestris* crown likely dried by resin top disease, kelo-like and charred by the prescribed burning of the site, sub-xeric heath forest, 31 Oct 2021, leg. & det. PV 4208 (H).

Artomyces piperatus (Kauffman) Jülich

DISTRIBUTION: New to Finland and hence new to 4b.

SPECIMEN EXAMINED: Lapponia sompiensis, Savukoski, Maltio Strict Nature Reserve, 7480823 N, 563230 E, on a whole fallen kelo trunk of *Pinus sylvestris* (diam. 30 cm, decay stage 5) in an old-growth barren heath forest with a lot of burned wood, 3 Sep 2021, leg. JP 4632*, det. OM (H). More information about this record can be found in Finnish in a paper by Pennanen (2023).

Athelia arachnoidea (Berk.) Jülich

Fig. 3

DISTRIBUTION: New to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Kajaani, Kirkkopuisto, 71222 N, 5353 E, on a lichen on the bark of living deciduous tree (diam. 50 cm) in a park with few old trees, 6 Nov 2021, leg. & det. TH 20211150 (OULU); Kajaani, Suvantola, 71240 N, 5338 E, on a lichen on the bark of a fallen branch of a deciduous tree (diam. 3 cm, decay stage 2) in a riparian thicket forest a with large amount of dead wood, 6 Nov 2021, leg. & det. TH 20211110 (OULU).

Fig. 2. *Amylocorticium cebennense* in Salla (JJ1812). Photo: Jari Julkunen

Fig. 3. *Athelia arachnoidea* in Kajaani (TH20211110). Photo: Teppo Helo

Athelia sibirica (Jülich) J. Erikss. & Ryvarden

DISTRIBUTION: 7th record in Finland; previous records: Lammi (2a), Oulu (three sites, 3a), Sotkamo (3b), Kittilä (4b) (Kotiranta et al. 2009, Kunttu et al. 2018, 2019, 2020).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Paltamo, Ellukka, 71413 N, 5329 E, on a fallen trunk of *Sorbus aucuparia* (diam. 7 cm, decay stage 2) in a spruce-dominated herb-rich forest, 7 Oct 2022, leg. & det. TH 20220886 (OULU).

Athelia singularis Parmasto

DISTRIBUTION: 7th record in Finland; previous records: Kajaani (3b), Lieksa (3b), Suomussalmi (3b), Rovaniemi (3c), Tervola (3c), and Suomussalmi (4a) (Kunttu et al. 2016b, 2018, FinBIF 2024c).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Suomussalmi, Malahvia, Likosuo, 7185163 N, 630879 E, on a branch of *Pinus sylvestris* (diam. 7 cm, decay stage 1, kelo tree) in a moist forest, 26 Sep 2022, leg. HL 26.9.2022/8, det. MK (OULU).

Athelicium hallenbergii Yurchenko & Kotir.

DISTRIBUTION: 6th record in Finland; previous records: Lammi (2a), Petäjävesi (2b), Viitasaari (2b), Oulu (3a), and Sotkamo (3b) (Kunttu et al. 2012, 2018, 2019).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Ristijärvi, Saukkovaara, 7146 N, 557 E, on a fallen branch of *Populus tremula* (diam. 3 cm, decay stage 2) in a mixed herb-rich heath forest, 23 Oct 2022, leg. & det. TH 20221280* (OULU).

Athelicium stridii K.H. Larss. & Hjortstam

DISTRIBUTION: New to 3b. 2nd record in Finland; previous record: Tuusula (2a) (Kotiranta et al. 2009).
SPECIMEN EXAMINED: Savonia borealis, Lapinlahti, Älänne, Tiilikanjoki, 7037358 N, 555515 E, on *Pinus sylvestris*, a piece of fallen crown, charred by the prescribed burning of the site, sub-xeric heath forest, 31 Oct 2021, leg. & det. PV 4199.2 (H).

Athelopsis glaucina (Bourdot & Galzin) Oberw. ex Parmasto

DISTRIBUTION: New to 3b. 10th–11th records in Finland; previous records: Finström (1a), Geta (1a), Helsinki (1b), Karjaa (1b), Tavastia australis (2a/2b), and in subzones 3a (two records), 3c, and 4c (H. Kotiranta, unpublished, Kunttu et al. 2021, FinBIF 2024c).

SPECIMEN EXAMINED: Ostrobottnia kajanensis, Puolanka, Pihlajavaara, 7187776 N, 539477 E, on a partly decorticated fallen trunk of deciduous tree (diam. 6 cm, decay stage 1) in a spruce-dominated herb-rich forest, 10 Aug 2023, leg. & det. MK 36/10.8.2023 (OULU); Sotkamo, Lontanniemi, 71160 N, 5435 E, on fallen branch of deciduous tree (diam. 1 cm, decay stage 3) in a spruce-dominated herb-rich forest, 18 Oct 2021, leg. & det. TH 20210745 (OULU).

Athelopsis subinconspicua (Litsch.) Jülich

DISTRIBUTION: New to 4c.
SPECIMEN EXAMINED: Lapponia inarensis, Inari, Paltojärvi Nature Reserve, 7616697 N, 515774 E, on a whole fallen kelo trunk of *Pinus sylvestris* (diam. 25 cm, decay stage 4) in an old-growth sub-xeric heath forest, 5 Sep 2023, leg. & det. JP 5241 (OULU).

Basidiodendron caesiocinereum (Höhn. & Litsch.) Luck-Allen **Fig. 4**

DISTRIBUTION: In addition to subzones 1b, 2a and 4d, which were mentioned by Spirin et al. (2021a), there are confirmed specimens of *B. caesiocinereum* s. str. in Finnish herbaria also in the following subzones: 2b, 3a, 3b, 3c, and 4a.

Basidiodendron cinerellum (Bourdot & Galzin) Spirin & V. Malysheva

DISTRIBUTION: In addition to subzones 1b, 2a, and 4d, which were mentioned by Spirin et al. (2021a), there are confirmed species of *B. cinerellum* in Finnish herbaria also in 3a.

Basidiodendron eyrei (Wakef.) Luck-Allen **Fig. 5**

DISTRIBUTION: In addition to subzones 1b and 2a, which were mentioned by Spirin et al. (2020), there are now confirmed specimens of *B. eyrei* s. str. in Finnish herbaria also in the following subzones: 3a, 3b, and 3c.

Basidiodendron glaucum Spirin & K.H. Larss. **Fig. 6**

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Hyrynsalmi, Peuravaara, 7170 N, 557 E, on a strongly decayed brown rot stump and a fallen trunk of *Picea abies* (diam. 35 cm, decay stage 4) with *Peniophorella praetermissa* in a very old spruce-dominated old-growth mesic heath forest with a large amount of dead wood, 19 Sep 2022, leg. & det. TH 20210409, conf. MK (OULU).

Fig. 4. Basidiodendron caesiocinereum s. str. in Ristijärvi (TH20221222). Photo: Teppo Helo

Fig. 5. *Basidiodendron eyrei* s. str. in Sotkamo (TH20210446). Photo: Teppo Helo

Fig. 6. *Basidiodendron glaucum* in Hyrynsalmi (TH20210409). Photo: Teppo Helo

Fig. 7. *Basidiodendron globisporum* in Paltamo (TH20220104). Photo: Teppo Helo

Fig. 8. *Basidiodendron trachysporum* in Ristijärvi (TH20221175). Photo: Teppo Helo

Basidiodendron globisporum Spirin & Malysheva **Fig. 7**

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Paltamo, Ellukka, 7141 N, 532 E, on a fallen branch of *Picea abies* (diam. 3 cm, decay stage 2) with *Vesiculomyces citrinus* in a spruce-dominated herb-rich forest, 7 Aug 2022, leg. TH 20220104, det. MK (OULU).

Basidiodendron trachysporum (Bourdot & Galzin) Spirin, M. Weiß & Miettinen **Fig. 8**

DISTRIBUTION: In addition to subzones 1a, 1b, 2a, and 2b mentioned by Spirin et al. (2021a), there are now confirmed specimens of *B. trachysporum* in Finnish herbaria in the following subzones: 3a, 3b, 3c, and 4b.

Botryobasidium aureum Parmasto

DISTRIBUTION: New to 3b. 9th–11th records in Finland; previous records: Jomala (1a), Lemland (1a), Raasepori (1b), Jyväskylä (2b), Keuruu (2b), Lieksa (2b), Pieksämäki (2b), and Oulu (3a) (Kunttu et al. 2012, 2019, FinBIF 2024c). All these specimens were anamorphs.
SPECIMENS EXAMINED: Regio aboënsis, Raasepori, Malmskogen Nature Reserve, 6668842 N, 296403 E, on a broken trunk of *Alnus incana* (diam. 10 cm, decay stage 4) in a herb-rich forest, 24 Sep 2022, leg. & det. JP 5034 (H); Ostrobottnia kajanensis, Puolanka, Pihlajavaara, 7187528 N, 539287 E, on a partly decorticated fallen trunk of *Betula* (diam. 11 cm, decay stage 2) in a spruce-dominated herb-rich forest, 7 Sep 2023, leg. & det. MK 6/7.9.2023 (OULU); Puolanka, Pihlajavaara, 7186 N, 538 E, on a fallen trunk of deciduous tree (diam. 25 cm, decay stage 3) with *Membranomyces delectabilis* and *Tomentella* sp. in a spruce-dominated herb-rich forest, 23 Sep 2022, leg. & det. TH 20220699 (OULU); Puolanka, Surkea, 7181568 N, 538148 E, on a moss covered decorticated fallen trunk of deciduous tree (diam. 20 cm, decay stage 4) in a spruce-dominated herb-rich forest, 9 Aug 2023, leg. & det. MK 1/9.8.2023 (OULU).

Botryobasidium ellipsosporum Hol. -Jech.

DISTRIBUTION: 6th record in Finland; previous records: Lammi (2a), Jyväskylä (2b), Kuhmo (3b), Puolanka (3b), and Sotkamo (3b) (Kotiranta et al. 2009, Kunttu et al. 2018, 2019, 2021, FinBIF 2024c). All these specimens were anamorphs.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Paltamo, Yölinnunkuru, 7148492 N, 528172 E, on a partly decorticated fallen trunk of *Picea abies* (diam. 35 cm, decay stage 2) in a spruce-dominated herb-rich forest, 25 Aug 2023, leg. & det. MK 27/25.8.2023 (OULU).

Botryobasidium pruinatum (Bres.) J. Erikss. **Fig. 9**

DISTRIBUTION: New to 3a.
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Oulu, Vihriäsaari, 7210847 N, 426045 E, on a partly decorticated fallen trunk of *Alnus incana* (diam. 10 cm, decay stage 1) in a dense deciduous-dominated coastal mixed forest, 20 Jul 2023, leg. & det. MK 39/23 (OULU).

Bulbillomyces farinosus (Bres.) Jülich **Fig. 10**

DISTRIBUTION: New to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Sotkamo, Heittojoki, 70879 N, 5618 E, on a fallen trunk of a deciduous tree (diam. 7 cm, decay stage 3) in a stream in a middle-aged spruce-dominated herb-rich heath forest, 3 Sep 2021, leg. & det. TH 20210146 (OULU).

Byssocorticium atrovirens (Fr.) Bondartsev & Singer ex Singer **Fig. 11**

DISTRIBUTION: New to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Paltamo, Itkonpuro, 7148492 N, 528172 E, on a partly decorticated fallen trunk of *Salix* (diam. 5 cm, decay stage 2) in a spruce-dominated herb-rich forest, 25 Aug 2023, leg. & det. MK 47/25.8.2023 (OULU); Paltamo, Itkonpuro, 71478 N, 5277 E, on a fallen trunk of *Pinus sylvestris* (diam. 10 cm, decay stage 3) in a herb and grass spruce mire, 20 Aug 2023, leg. & det. TH 20230457 (OULU).

Fig. 9. *Botryobasidium pruinatum* in Oulu (MK 39.23). Photo: Matti Kulju

Fig. 10. *Bulbillomyces farinosus* in Sotkamo (TH20210146). Photo: Teppo Helo

Fig. 11. *Byssocorticium atrovirens* in Paltamo (TH20230457). Photo: Teppo Helo

Fig. 12. *Ceratosebacina longispora* in Kajaani (TH20210918). Photo: Teppo Helo

Byssocorticium pulchrum (S. Lundell) M. P. Christ.

DISTRIBUTION: New to 1b.
SPECIMEN EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6667345 N, 250547 E, on a broken fallen trunk of *Pinus sylvestris (*diam. 23 cm, length 5 m, decay stage 4) in a mesic heath forest, 19 Sep 2021, leg. PK 10084, det. MK (OULU).

Candelabrochaete septocystidia (Burt) Burds.

DISTRIBUTION: 8th record in Finland; previous records: Helsinki (1b), Hämeenlinna (2a), Salo (2a, two sites), Jyväskylä (2b), Lappeenranta (2b), and Sotkamo (3b) (Kotiranta et al. 2009, Kunttu et al. 2019, FinBIF 2024c). Endangered.
SPECIMEN EXAMINED: Nylandia, Kirkkonummi, Strömsby, 6663154 N, 354626 E, on a whole fallen trunk of *Picea abies* (diam. 30 cm, decay stage 3) in a mesic heath forest with a lot of dead wood, 15 Oct 2023, leg. & det. JP 5511, conf. MK (OULU).

Candelabrochaete verruculosa Hjortstam

DISTRIBUTION: New to 3a. 2nd record in Finland; previous record: Salla (4a) (Kotiranta et al. 2009).
SPECIMEN EXAMINED: Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7011396 N, 389602 E, on a whole fallen kelo trunk of *Pinus sylvestris* (diam. 40 cm, decay stage 2) in an old-growth sub-xeric heath forest, 13 Sep 2023, leg. & det. JP 5436, conf. MK (OULU).

Ceratobasidium cornigerum (Bourdot) D. P. Rogers

DISTRIBUTION: New to 3a.
SPECIMENS EXAMINED: Ostrobottnia ouluensis, Liminka, Puodinmäki, 7189450 N, 423989 E, on a trunk of deciduous tree (diam. 3 cm, decay stage 2) in a dense herb-rich deciduous-dominated forest, 6 Sep 2023, leg. & det. PJ 060923_16, conf. MK (OULU); Oulu, Hevossaari, 7210769 N, 426729 E; on a trunk of deciduous tree (diam. 3 cm, decay stage 4) in a mesic herb-rich deciduous-dominated forest, 22 Sep 2023, leg. & det. PJ 220923_24a, conf. MK (OULU).

Ceratosebacina longispora (Hauerslev) P. Roberts **Fig. 12**

DISTRIBUTION: New to 3b. 4th–5th records in Finland; previous records: Helsinki (1b), Lohja (1b), and Kuusamo (4a) (Kotiranta et al. 2009, Miettinen 2012, FinBIF 2024c).
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Kajaani, Karolineburg, 71229 N, 5355 E, on a fallen trunk of Betula sp. (diam. 40 cm, decay stage 3) with Fomes fomentarius in a spruce-dominated herb-rich forest, 29 Oct 2021, leg. & det. TH 20210918 (OULU); Sotkamo, Lauttolampi, 71158 N, 5434 E, on a fallen branch of deciduous tree (diam. 2 cm, decay stage 3) in a spruce-dominated herb-rich forest, 22 Sep 2022, leg. & det. TH 20220655 (OULU).

Cerinomyces aeneus A. Savchenko, Miettinen & J.C. Zamora Fig. 13

DISTRIBUTION: New to 4c. 6th record in Finland; previous records: Lohja (1a), Helsinki (1a), Lempäälä (2a), Vantaa (2a), and Sysmä (2b) (Savchenko et al. 2021, FinBIF 2024c).
SPECIMEN EXAMINED: Regio Kuusamoënsis, Salla, Kakkonen, 7514441 N, 609943 E, on fallen trunk pieces of *Betula pubescens* subsp. *czerepanovii* (diam. 8 cm, decay stage 1–4) in a phasing zone between mountain birch forest and mountain heath on the top of the fell, 12 Jun 2022, leg. & det. JJ1816 (TU), conf. AS.

Cerinomyces borealis Miettinen, Spirin & A. Savchenko **Fig. 14**

DISTRIBUTION: New to 1b. 7th–15th records in Finland; previous records: Lammi (2a), Padasjoki (2a), Jyväskylä (2b), Saarijärvi (3a), Kuhmo (3b), and Sotkamo (3b) (Kotiranta et al. 2009, Kunttu et al. 2019, Savchenko et al. 2021).
NOTES: A part of these records has been published by name *C. cornigerum*, but later they were confirmed as *C. borealis*.
SPECIMENS EXAMINED: Regio aboënsis, Vihti, Nuuksio National Park, 6687145 N, 359448 E, on a whole fallen trunk of *Pinus sylvestris* (diam. 15 cm, decay stage 3) in a burned rocky terrain forest, 20 Sep 2021, leg. & det. JP 4769 (H); Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7011140 N, 387864 E, on a whole fallen kelo trunk

Fig. 13. *Cerinomyces aeneus* in Salla (JJ1816). Photo: Jari Julkunen

Fig. 14. *Cerinomyces borealis* in Vihti (JP4769). Photo: Jorma Pennanen

of *Pinus sylvestris* (diam. 33 cm, decay stage 2) in an old-growth sub-xeric heath forest, 14 Sep 2023, leg. & det. JP 5362 (OULU); Ostrobottnia kajanensis, Sotkamo, Viltonvaara, 7081 N, 561 E, on a trunk of *Picea abies* (diam. 30 cm, decay stage 4) with *Botryobasidium subcoronatum* in an old spruce-dominated mesic heath forest with very large amount of dead wood, 3 Oct 2021, leg. & det. TH 20210611 (OULU); Kuhmo, Elimyssalo, 71237 N, 6593 E, on a fallen trunk of *Picea abies* (diam. 35 cm, decay stage 4) in a spruce-dominated old-growth mesic heath forest with a substantial amount of dead wood, 6 Oct 2020, leg. TH 20200040, det. MK (OULU); Kuhmo, Ulvinsalo, 71237 N, 6593 E, on a fallen trunk of *Picea abies* (diam. 35 cm, decay stage 4) in a spruce-dominated old-growth mesic heath forest with a substantial amount of dead wood, 8 Oct 2020, leg. & det. TH 20200042 (OULU); Paltamo, Hakasuo 71420 N, 5247 E, on a fallen trunk of *Picea abies* (diam. 30 cm, decay stage 4) in a spruce-dominated old-growth mesic heath forest, 2 Oct 2021, leg. & det. TH 20210560 (OULU); Paltamo, Ellukka, 7141 N, 532 E, on a fallen trunk of *Picea abies* (diam. 25 cm, decay stage 3) in a spruce-dominated herb-rich forest, 7 Oct 2022, leg. & det. TH 20220989 (OULU); Sotkamo, Losonvaara, 7104 N, 546 E, on a fallen trunk of *Picea abies* (diam. 30 cm, decay stage 4) in an old spruce-dominated mesic heath forest, 6 Aug 2023, leg. & det. TH 20230219 (OULU); Puolanka, Mustakumpu, 7169 N, 551 E, on a fallen trunk of *Picea abies* (diam. 25 cm, decay stage 4) in old-growth spruce-dominated mesic heath forest with a substantial amount of dead wood, 27 Aug 2023, leg. & det. TH 20230521 (OULU).

Clavaria amoenoides Corner Thinad & Anand

DISTRIBUTION: New to 3a.

SPECIMEN EXAMINED: Ostrobottnia ouluensis, Oulu, Linnanmaa, Botanical Garden, Fennoscandian mountain plant section, 7216425 N, 427623 E, in dry grassland, 25 Aug 2022, leg. & det. MK 67/22 (OULU); Ii, Hamina, 7245585 N, 423951 E, in a yard lawn, 2 Sep 2022, leg. MV, det. MV & MK (OULU).

Clavaria greletii Boud.

DISTRIBUTION: 10th–12th records in Finland; previous records: Pälkäne (2a), Lappeenranta (2b), Pieksänmaa (2b), Ikaalinen (3a), Kajaani (3b, two sites), Kuhmo (3b), Sotkamo (3b), and Keminmaa (3c) (Kunttu et al. 2016, 2021).

SPECIMENS EXAMINED: Karelia borealis, Kitee, Partasensaari, 6883580 N, 670232 E, on grazed grassland, 19 Sep 2020, leg. Piia Lamminsivu and Anne-Mari Enne, det. Mika Toivonen (TUR); Ostrobottnia kajanensis, Puolanka, 7193526 N, 532952 E, on a lawn by the gate of a graveyard, 30 Aug 2017, leg. & det. TK 2933, Lasse Kosonen, Jarkko Korhonen and Unto Söderholm, ibid. 11 Sep 2020, leg. & det. TK 4756, ibid. 10 Sep 2023, leg. & det. TK 6456; Ostrobottnia ultima, Tornio, Ala-Tornio, 7303986 N, 370289 E, on sandy ground by the stone fence of a graveyard, 6 Sep 2023, leg. & det. TK 6388 (OULU).

Clavariadelphus mucronatus Wells & Kempton

DISTRIBUTION: New to Finland and hence new to 3c and 4b.

SPECIMENS EXAMINED: Lapponia kittilensis, Kolari, Ylläs 7495992 N, 380708 E, in a moist herb-rich mixed forest under *Picea abies* by a creek, 9 Sep 2014, leg. & det. TK 1625 (H); Ostrobotnia ultima, Pello, Jai-Paljukka, 7410877 N, 375670 E, in a moist herb-rich mixed forest under *Picea abies*, 12 Aug 2016, leg & det TK 2323*, (OULU, GenBank OQ927963), Rovaniemi, Pisavaara, 7352058 N, 416263 E, on a needle bed in a *Picea abies* forest by a creek, 10 Oct 2020, leg. & det. TK 5024*, (OULU, GenBank OQ927964); ibid. 7 Oct 2022, leg. TK 6011, MK, Seppo Huhmarniemi, det TK (OULU); Rovaniemi, Pisavaara, 7351899 N, 416417 E, in a moist herb-rich mixed forest under *Picea abies*, 18 Sep 2023, leg. TK 6535 and Seija Korpinen det. TK (OULU).

Clavulicium macounii (Burt) J. Erikss. & Boid. ex Parmasto **Fig. 15**

DISTRIBUTION: New to 1b. 5th record in Finland; previous records: Pomarkku (2a), Sastamala (2a), Vantaa (2a), and Vehkalahti (2a) (Kotiranta et al. 2009, Kunttu et al. 2020).

SPECIMEN EXAMINED: Nylandia, Kirkkonummi, Masala, 6671283 N, 361357 E, on a whole fallen trunk of *Picea abies* (diam. 40 cm, decay stage

Fig. 15. *Clavulicium macounii* in Kirkkonummi (JP4929). Photo: Jorma Pennanen

Fig. 16. *Clavulina perplexa* in Simo (TK5968). Photo: Tapio Kekki

Fig. 17. *Clavulina reae* in Rovaniemi (TK4893). Photo: Tapio Kekki

Fig. 18. *Dacryonaema macrosporum* in Nurmes (JJ1730). Photo: Jari Julkunen

3) in a moist *Picea abies*-dominated mesic heath forest, 13 Oct 2021, leg. & det. JP 4929 (H).

Clavulina perplexa E. Campo, Franchi & M. Marchetti **Fig. 1**

DISTRIBUTION: New to Finland, and hence new to 3c.
SPECIMEN EXAMINED: Ostrobottnia ultima, Simo, Ykskuusi, 7283687 N, 399112 E, on the ground in a coastal meadow close to the waterline, 24 Sep 2022, leg. & det. TK 5968* OULU).

Clavulina reae Olariaga **Fig. 17**

DISTRIBUTION: New to Finland, and hence new to 3c.
SPECIMENS EXAMINED: Ostrobottnia ultima, Rovaniemi, Savioja, 7346166 N, 426900 E, on the ground in a moist herb-rich mixed forest, 20 Sep 2020, leg. & det. TK 4893* (OULU); Keminmaa, Old Church, 7301041 N, 387917 E, on the ground in a grazed meadow with Picea abies and other trees, 27 Sep 2020, leg. TK 4934*, Merja Lipponen and Seppo Huhmarniemi, det. TK (OULU).

Coronicum alboglaucum (Bourdot & Galzin) Jülich

DISTRIBUTION: New to 1b. 8th record in Finland; previous records: Hämeenlinna (2a), Luhanka (2b), Muurame (2b), Äänekoski (2b), Kajaani (3b, two sites), and Paltamo (3b) (Kunttu et al. 2020).
SPECIMENS EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6666550 N, 250764 E, on a broken fallen trunk of *Picea abies* (diam. 10 cm, length 6,5 m, decay stage 4) in a mesic heath forest, 13 Sep 2021, leg. PK 9850b, det. MK (OULU); 6666550 N:250764 E, on a cone of *Picea abies* in a mesic heath forest, 13 Sep 2021, leg. PK 9852, det. MK (OULU).

Dacryonaema macrosporum J.C. Zamora & S. Ekman **Fig. 18**

DISTRIBUTION: New to 3b. 4th record in Finland; previous records were from Salla (4a) and Rovaniemi (4b) (Zamora & Ekman 2020).
SPECIMEN EXAMINED: Karelia borealis, Nurmes, Kaivannonlampi, 7039902 N, 587987 E, on a fallen whole *Pinus sylvestris* kelo (diam. 7 cm, decay stage 1–2) in a phasing zone between dwarf-shrub pine bog and low-sedge bog, 30 Oct 2021, leg. & det. JJ1730 (TU & OULU), conf. AS.

Dendrothele amygdalispora Hjortstam

DISTRIBUTION: New to 3a.
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Oulu, Pilpaoja, 7207918 N, 439087 E, on a fallen trunk of *Populus tremula* (decay stage 2) in a mesic heath forest along a stream, 18 Jul 2021, leg. & det. AM 584a, conf. MK (OULU).

Dichostereum effuscatum (Cooke & Ellis) Boidin & Lanq. **Fig. 19**

DISTRIBUTION: New to Finland and hence new to 1b.
SPECIMEN EXAMINED: Regio aboënsis, Lohja, Kyynäräjärvi Nature Reserve, 6697114 N, 339475 E, on a decorticated broken trunk of *Alnus incana* (diam. 20 cm, decay stage 3) in a wet lake shore swamp, 10 Oct 2022, leg. & det. JP 5079 (H), conf. OM.

Elaphocephala iocularis Pouzar **Fig. 20**

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Sotkamo, Viltonvaara, 7081 N, 561 E, on a trunk of *Populus tremula* (diam. 30 cm, decay stage 4) in an old spruce-dominated mesic heath forest with a substantial amount of dead wood, 3 Oct 2021, leg. & det. TH 20210641 (OULU).

Exidiopsis succinea K. Wells & Raitv. **Fig. 21**

DISTRIBUTION: New to 3b. 6th record in Finland; previous records: Tammela (2a, four records), and Rovaniemi (3c) (Kunttu et al. 2020)
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Sotkamo, Lauttolampi, 71160 N, 5435 E, on a fallen trunk of a deciduous tree (diam. 6 cm, decay stage 3) in young mixed herb-rich forest, 18 Oct 2021, leg. & det. TH 20210767* (OULU).

Femsjonia peziziformis (Lév.) P. Karst.

Fig. 19. *Dichostereum effuscatum* in Raasepori (JP5079). Photo: Jorma Pennanen

Fig. 20. *Elaphocephala iocularis* in Sotkamo (TH20210641). Photo: Teppo Helo

Fig. 21. *Exidiopsis succinea* in Sotkamo (TH20210767). Photo: Teppo Helo

Fig. 22. *Gloeocystidiellum kenyense* in Oulu (AM1001a). Photo: Aki Moilanen

DISTRIBUTION: New to 2b.
SPECIMEN EXAMINED: Savonia borealis, Kuopio, Kolmisoppi, 6971607 N, 529792 E, on a whole fallen trunk of *Picea abies* (diam. 45 cm, decay stage 2) in a mature *Picea abies*-dominated herb-rich heath forest, 3 Sep 2021, leg. & det. JJ1756 (OULU).

Gloeocystidiellum kenyense Hjortstam

Fig. 22

DISTRIBUTION: New to Finland and hence new to 1b, 3a, 3b.
SPECIMENS EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6667811 N, 250144 E, on a whole fallen trunk of *Picea abies* (diam. 21 cm, decay stage 1) in a mesic heath forest, 17 Sep 2021, leg. PK 9995, det. MK (OULU); Ostrobottnia ouluensis, Oulu, Pilpaoja, 7207915 N, 439053 E, on a fallen trunk of *Populus tremula* (deacy stage 3) in a mesic heath forest along a stream, 16 Sep 2022, leg. & det. AM 1001a, conf. MK (OULU); Ostrobottnia kajanensis, Puolanka, Murtiovaara, 7179489 N, 529920 E, on a fallen trunk of *Populus tremula* (decay stage 2) in a spruce-dominated mixed forest, 16 Aug 2020, leg. AM 312, det. MK (OULU); Kajaani, Patjamäki, 7112 N:490 E, on a fallen trunk of *Populus tremula* (diam. 45 cm, decay stage 2) in an old mesic heath forest, 31 Oct. 2021, leg. & det. TH 20211040 (OULU).

Gloeodontia subasperispora (Litsch.) E. Larss. & K.H. Larss.

DISTRIBUTION: 5th record in Finland; previous records: Hämeenlinna (2a, two sites), Pori (2a), and Siikainen (3a) (Kotiranta et al. 2009).
NOTES: Near Threatened (NT).
SPECIMENS EXAMINED: Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7011396 N, 389602 E, on a kelo snag of *Pinus sylvestris* (diam. 28 cm, decay stage 2) in an old sub-xeric heath forest, 13 Sep 2023, leg. & det. JP 5347 (OULU); Kivijärvi, Salamanperä Strict Nature Reserve, 7011396 N, 389602 E, on a whole fallen kelo trunk of *Pinus sylvestris* (diam. 37 cm, decay stage 2) in an old-growth sub-xeric heath forest, 13 Sep 2023, leg. & det. JP 5348 (OULU).

Gloiothele lactescens (Berk.) Hjortstam

DISTRIBUTION: 5th record in Finland; previous records: Helsinki (1b, three sites), and Turku (1b) (Kotiranta et al. 2009, Kunttu et al. 2021, FinBIF 2024c).
NOTES: Near Threatened (NT).
SPECIMEN EXAMINED: Regio aboënsis, Raasepori, Fiskars, 6670066 N, 307504 E, on a rotten stump of *Quercus robur*, 3 Nov 2023, leg. Kari Aaltonen, det. MK (OULU).

Helicogloea aquilonia Spirin & V. Malysheva

DISTRIBUTION: 8–9th records in Finland; previous records: Lohja (1b), Nokia (2a), Oulu (3a), Ristijärvi (3b), and Sotkamo (3b) (Spirin et al. 2018a, Kunttu et al. 2020, FinBIF 2024c).
SPECIMENS EXAMINED: Karelia borealis, Nurmes, Kaivannonlampi, 7039847 N, 587953 E, on a *Betula pubescens* stump (diam. 8 cm, decay stage 1) in a phasing zone of an oligotrophic low-sedge fen and a mature *Pinus sylverstris*-dominated xeric heath forest, 30. Oct 2021, leg. JJ1725 (OULU), det. MK; Ostrobottnia ouluensis, Oulu, Kontinkangas, 7209792 N, 429704 E, on a fallen trunk of *Populus tremula* (decay stage 3) in a *Populus tremula*-dominated herb-rich heath forest, 19 Sep 2021, leg. & det AM 829, conf. MK (OULU).

Helicogloea pellucida Spirin & Malysheva

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Puolanka, Surkea, 7181732 N, 538025 E, on a decorticated fallen trunk of *Betula* (diam. 20 cm, decay stage 2) with *Botryobasidium isabellinum* in a spruce-dominated herb-rich forest, 8 Sep 2023, leg. MK 54/8.9.2023, det. MK & VS (OULU).

Helicogloea subardosiaca (Bourdot & Galzin) Donk

Fig. 23

DISTRIBUTION: 2nd record in Finland; previous record: Inkoo (1b) (Spirin et al. 2018a).
SPECIMEN EXAMINED: Nylandia, Raasepori, Gullö, 6649571 N, 298285 E, on a dead standing tree of *Pinus sylvestris*, on a barkless portion at the base of the tree (diam 35 cm, decay stage 1) in a mesic heath forest, 30 Oct 2021, leg. & det. JP 4941 (H).

Hirticlavula elegans J.H.Petersen & Læssøe

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Kajaani, Karolineburg, 71229 N, 5355 E, on a fallen branch of *Prunus padus* (diam. 5 cm, decay stage 3) with *Tomentella stuposa* and *Tomentella bryophila* in a spruce-dominated herb-rich forest, 12 Aug 2022, leg. TH 20220273, det. MK (OULU).

Hyalodon piceicola (Bourdot) Malysheva & Spirin **Fig. 24**

DISTRIBUTION: New to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Puolanka, Pihlajavaara, 71864 N, 5386 E, on a fallen branch of *Picea abies* (diam. 2 cm, decay stage 3) in a spruce-dominated herb-rich forest, 23 Sep 2022, leg. & det. TH 20220692 (OULU).

Hyphoderma capitatum J. Erikss. & Å. Strid.

DISTRIBUTION: New to 1b. 2nd record in Finland; previous record: Geta (1a) (Kotiranta et al. 2009).
SPECIMEN EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6667484 N, 250397 E, on a whole fallen trunk of *Picea abies* (diam. 19 cm, decay stage 1) with *Hyphodontia pallidula* in a mesic heath forest, 30 Sep 2021, leg. PK 10497, det. MK (OULU).

Hyphoderma definitum (H.S. Jacks.) Donk

DISTRIBUTION: New to 3a.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Kajaani, Patjamäki, 71126 N, 4908 E, on a fallen trunk of *Picea abies* (diam. 30 cm, decay stage 3) in a pine-dominated mesic heath forest, 30 Oct 2021, leg. & det. TH 20210995 (OULU).

Hyphoderma mutatum (Peck) Donk **Fig. 25**

DISTRIBUTION: New to 3a. 7th –11th records in Finland; previous records: Helsinki (1b), Raasepori (1b, two sites), Turku (1b), Jämsä (2b), and Siikainen (3a) (Kotiranta et al. 2009, FinBIF 2024c).
NOTES: Vulnerable (VU). Earlier this species was assessed as regionally extinct (RE) in subzone 3a (Kotiranta et al. 2009).
SPECIMENS EXAMINED: Regio aboënsis, Hanko, Lappohja, 6644626 N, 288573 E, on a dead standing tree of *Sorbus aucuparia* (diam. 10 cm, decay stage 1) in a coastal herb-rich heath forest, 19 Oct 2022, leg. & det. JP 5106 (H); Raasepori, Ramsholmen Nature Reserve, 6653170 N, 301090 E, on a whole fallen trunk of *Populus tremula* (diam 35 cm, decay stage 2) in a herb-rich heath forest, 25 Mar 2023, leg. & det. JP 5180 (OULU); Nylandia, Kirkkonummi, Killinmäki, 6668757 N, 359883 E, on a broken trunk of *Salix caprea* (diam. 15 cm, decay stage 2) along a ditch, 18 Oct 2023, leg. & det. JP 5628 (OULU); Ostrobottnia ouluensis, Liminka, Puodinmäki, 7189524 N, 423926 E, on a standing trunk of a deciduous tree (diam. 15 cm) in a riverside next to a field, 26 Nov 2023, leg. & det. PJ 261123_1, conf. KHL & MK (OULU); on a fallen trunk and branches of a deciduous tree (diam. 18 cm) by a riverside next to a field, 18 Nov 2023, leg. & det. PJ 181123_3, conf. KHL & MK (OULU).

Hyphoderma nemorale K.H. Larss.

DISTRIBUTION: 8th record in Finland; previous records: Nauvo (1b), Raasepori (1b, two sites), Helsinki (1b), Kajaani (3a), and Kuusamo (4a) (Kotiranta et al. 2009; Kunttu et al. 2018, 2020, FinBIF 2024c)
SPECIMEN EXAMINED: Regio aboënsis, Raasepori, Näsbyholmen, 6665640 N, 306140 E, on a broken trunk of *Alnus glutinosa* (diam. 20 cm, decay stage 3) in a coastal *Alnus* sp. forest, 20 Jun 2022, leg. & det. JP 4952 (H).

Hyphoderma obtusiforme J. Erikss. & Å. Strid

DISTRIBUTION: New to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Ristijärvi, Saukkovaara, 7146 N, 557 E, on a fallen trunk of *Betula* sp. (diam. 10 cm, decay stage 2) in a mixed herb-rich heath forest, 22 Oct 2022, leg. & det. TH 20221205 (OULU).

Hyphoderma velatum K.H. Larss.

DISTRIBUTION: New to 1b.
SPECIMEN EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6666550 N, 250764 E, on a broken fallen trunk of *Picea abies* (diam. 10 cm, length 6,5 m, decay stage 4) in a mesic heath forest, 13 Sep 2021, leg. PK 9849, det. MK (OULU).

Hyphodontia incrustata Kotir. & Saaren.

Fig. 23. *Helicogloea subardosiaca* in Raasepori (JP4941). Photo: Jorma Pennanen

Fig. 24. *Hyalodon piceicola* in Puolanka (TH 20220692). Photo: Teppo Helo.

Fig. 25. *Hyphoderma mutatum* in Hanko (JP5106). Photo: Jorma Pennanen

Fig. 26. *Hyphodontiella hauerslevii* in Oulu (AM858). Photo: Aki Moilanen

DISTRIBUTION: New to 3a.
SPECIMENS EXAMINED: Ostrobottnia ouluensis, Liminka, Haaransilta, Jokela, 7189681 N, 427507 E, on a branch of a deciduous tree (diam. 1 cm, decay stage 3) in a herb-rich, deciduous-dominated riverside forest, 17 Oct 2022, leg. & det. PJ 171022_20, conf. MK (OULU); Liminka, Alapää, Uusi Liminganjoki, 7190471 N, 423805 E, on a fallen trunk of a deciduous tree (diam. 4 cm, decay stage 3) in a dense herb-rich deciduous-dominated riverside forest, 29 Aug 2022, leg. & det. PJ 290823_7, conf. MK (OULU); Liminka, Alapää, Uusi Liminganjoki, 7190473 N, 423800 E, on a fallen trunk of *Salix* sp. (diam. 3 cm, decay stage 3) in a dense herb-rich deciduous-dominated riverside forest, 29 Aug 2022, leg. & det. PJ 290823_9, conf. MK (OULU).

Hyphodontiella hauerslevii K.H. Larss. & Hjortstam **Fig. 26**

DISTRIBUTION: New to 3a. 3rd record in Finland; previous records: Jyväskylä (2b), Petäjävesi (2b) (Kunttu et al. 2018).
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Oulu, Kontinkangas, 7209796 N, 429688 E, on a fallen trunk of *Populus tremula* (decay stage 4) in a *Populus tremula*-dominated mesic heath forest, 1 Oct 2021, leg. & det. AM 858, conf. MK (OULU).

Hypochnicium lundellii (Bourdot) J. Erikss.

DISTRIBUTION: New to 3a.
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Oulu, Metsokangas, 7204578 N, 432085 E, on a partly decorticated branch of *Picea abies* (diam. 0,3 cm, decay stage 1) in a moist mixed forest, 30 Oct 2022, leg. & det. MK 197/22 (OULU).

Hypochnicium multiforme (Berk. & Broome) Hjorstam **Fig. 27**

DISTRIBUTION: New to 3b.
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Paltamo, Yölinnunkuru, 7148255 N, 528058 E, on a partly decorticated fallen trunk of *Pinus sylvestris* (diam. 14 cm, decay stage 1) in a spruce-dominated herb-rich forest, 2 Oct 2023, leg. & det. MK 36/2.10.2023 (OULU); Sotkamo, Lappavaara, 70892 N, 5652 E, on a trunk of *Pinus sylvestris* (diam. 30 cm, decay stage 1) in a pine-dominated mesic heath forest, 4 Oct 2021, leg. & det. TH 20210678 (OULU).

Hypochnicium subrigescens Boidin

DISTRIBUTION: New to 3a.
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Oulu, Oulunsalo, Varjakka, 7208203 N, 420736 E, on a partly decorticated fallen trunk of *Alnus incana* (diam. 10 cm, decay stage 3) in a dense deciduous-dominated coastal mixed forest, 23 Aug 2022, leg. & det. MK 56/22 (OULU).

Jaapia argillacea Bres.

DISTRIBUTION: New to 3a.
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Liminka, Värminkoski, Liminganjoki, 7186068 N, 421940 E, on a fallen trunk of *Alnus incana* (diam. 10 cm, decay stage 2) in a herb-rich conifer-dominated riverside heath forest, 13 Sep 2023, leg. & det. PJ 120923_9, conf. MK (OULU).

Jaapia ochroleuca (Bres.) Nannf. & J. Erikss

DISTRIBUTION: New to 2b.
SPECIMEN EXAMINED: Savonia borealis, Lapinlahti, Härkäkorpi, 7029509 N, 522468 E, on a decayed root of a fallen trunk of *Pinus sylvestris* (root diam. 6 cm, decay stage 4–5) in a *Pinus sylvestris*-dominated drained peatland dwarf shrub forest, 29 Aug 2018, leg. JJ1125* (OULU) det. MK.

Kneiffiella cineracea (Bourdot & Galzin) Jül. & Stalpers

DISTRIBUTION: New to 3a.
SPECIMEN EXAMINED: Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7011891 N, 388864 E, on a whole fallen kelo trunk of *Pinus sylvestris* (decay stage 1) in an old-growth sub-xeric heath forest, 16 Sep 2023, leg. & det. JP 5393 (OULU).

Kneiffiella curvispora (J. Erikss. & Hjortstam) Jülich & Stalpers

DISTRIBUTION: 10th record in Finland; previous records: Koski (2a), Lammi (2a), Padasjoki (2a), Muurame (2b), Ruovesi (2b), Pyhäjärvi (3a), Saarijärvi (3a), Paltamo (3b), and Sotkamo (3b) (Kotiranta et al. 2009, Kunttu et al. 2011, 2015, 2016a, 2019).
SPECIMEN EXAMINED: Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7011396 N, 389602 E, on a whole fallen kelo trunk of *Pinus sylvestris* (diam. 42 cm, decay stage 1) in an old-growth sub-xeric heath forest, 13 Sep 2023, leg. & det. JP 4580 (OULU).

Kneiffiella efibulata (J. Erikss. & Hjortstam) Jül. & Stalpers **Fig. 28**

DISTRIBUTION: New to 3b. 3rd record in Finland; previous records: Oulu (3a), and Utsjoki (4d) (Kotiranta et al. 2009, Kotiranta & Shiryaev 2013).
NOTES: Vulnerable (VU).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Paltamo, Ellukka, 71413 N, 5329 E, on a fallen branch of *Sorbus aucuparia* (diam. 2 cm, decay stage 3) in a spruce-dominated herb-rich forest, 7 Oct 2022, leg. TH 20220904, Det. MK (OULU).

Leptosporomyces fuscostratus (Burt) Hjortstam **Fig. 29**

DISTRIBUTION: New to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Suomussalmi, Koisti, 7174 N, 599 E, on a fallen branch of *Pinus sylvestris* (diam. 8 cm, decay stage 2, kelo tree) in a very old pine-dominated mesic heath forest with substantial amount of dead wood, 3 Sep 2023, leg. & det. TH 20230599 (OULU).

Lindtneria chordulata (D. P. Rogers) Hjortstam

DISTRIBUTION: New to 3a. 9th record in Finland; previous records: Helsinki (1b), Kemiönsaari (1b), Parainen (1b), and Hämeenlinna (2a) (Kunttu et al. 2012, 2014, FinBIF 2024c).
NOTES: Near Threatened (NT).
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Oulu, Metsokangas, 7204073 N, 432021 E, on a decorticated fallen trunk of *Salix* sp. (diam. 3,5 cm, decay stage 4) in a herb-rich deciduous-dominated mixed forest, 25 Jul 2023, leg. & det. MK 46/23 (OULU).

Lindtneria leucobryophila (Henn.) Jülich

DISTRIBUTION: New to Finland and hence new to 2a.
SPECIMEN EXAMINED: Nylandia, Sipoo, Box S, Spjutsundintie 283, Vårberga, central area, 6685139 N, 412607 E, on bryophytes and stones in an edge of a rock, 22 Nov 2021, leg. HV 26198, det. MK (H).

Luellia furcata K.H.Larss. & Hjortstam

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Sotkamo, Lauttolampi, 71158 N, 5434 E, on a fallen trunk of *Picea abies* (diam. 5 cm, decay stage 4) in a spruce-dominated herb-rich forest, 22 Sep 2022, leg. TH 20220638, det. MK (OULU).

Luellia recondita (Jacks.) Larss. & Hjortst.

DISTRIBUTION: 9th record in Finland; previous records: Eckerö (1a), Helsinki (1b), Kemiönsaari (1b), Tammisaari (1b), Hamina (2a), Jyväskylä (2b), Kuhmo (3b), and Rovaniemi (3c) (Kotiranta et al. 2009, Kunttu et al. 2012, 2015, 2016, 2018, 2021).
SPECIMEN EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6666664 N, 250538 E, on a whole fallen trunk of *Picea abies* (diam. 22 cm, length 16 m, decay stage 3) with *Resinicium bicolor* in a mesic heath forest, 13 Sep 2021, leg. PK 9779, det. MK (OULU); 6667790 N, 249800 E, on a whole fallen trunk of *Picea abies* (diam. 4 cm, decay stage 3) in a mesic heath forest, 20 Sep 2021, leg. PK 10175, det. MK (OULU).

Melzericium udicola (Bourd.) Hauerslev

DISTRIBUTION: New to 3a. 8th record in Finland; previous records: Helsinki (1b), Raasepori (1b), Ulvila (2a), Luhanka (2b), and Enontekiö (4d) (Kunttu et al. 2011, 2020, FinBIF 2024c).
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Liminka, Kirkonkylä, 7189113 N, 425138 E, on a piece of *Picea abies* trunk (diam. 5 cm) in a garden, 22 Apr 2023, leg. & det. PJ 220423_2, conf. MK (OULU).

Membranomyces delectabilis (H.S. Jacks.) Kotir. & Saaren.

Fig. 27. *Hypochnicium multiforme* in Sotkamo (TH20210678). Photo: Teppo Helo

Fig. 28. *Kneiffiella efibulata* in Paltamo (TH20220904). Photo Teppo: Helo

Fig. 29. *Leptosporomyces fuscostratus* in Suomussalmi (TH20230599). Photo: Teppo Helo

Fig. 30. *Membranomyces spurius* in Paltamo (MK 24/2.10.2023). Photo: Matti Kulju

DISTRIBUTION: New to 3b. 6th–7th records in Finland; previous records: Helsinki (1b), Hämeenlinna (2a), Pori (2a), Tammela (2a), and Kuhmoinen (2b) (Kotiranta et al. 2009, Kunttu et al. 2020).
SPECIMENS EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6667466 N, 250883 E, on a whole fallen trunk of *Picea abies* (diam. 17 cm, decay stage 3) in a mesic heath forest, 28 Sep 2021, leg. PK 10440b, det. MK (OULU, dupl. H); Ostrobottnia kajanensis, Puolanka, Pihlajavaara, 71864 N, 5386 E, on a fallen trunk of *Alnus incana* (diam. 16 cm, decay stage 4) in a mixed herb-rich forest, 9 Aug 2022, leg. & det. TH 20220190 (OULU).

Membranomyces spurius (Bourdot) Jülich

Fig. 30

DISTRIBUTION: New to 3b. 3rd record in Finland; previous records: Vantaa (2a), and Utsjoki (4d) (H. Kotiranta pers. comm., FinBIF 2024c).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Paltamo, Yölinnunkuru, 7148374 N, 528128 E, on woody detritus under a fallen trunk of *Alnus incana* in a spruce-dominated herb-rich forest, 2 Oct 2023, leg. & det. MK 24/2.10.2023 (OULU).

Mycostilla vermiformis (Berk. & Broome) Spirin & Malysheva

DISTRIBUTION: New to 4b. 3rd record in Finland; previous records: Helsinki (1b) and Sotkamo (3b) (Kunttu et al. 2021).
SPECIMEN EXAMINED: Ostrobottnia ultima, Rovaniemi, Rättiselkä, 7399242 N, 464061 E, on an uprooted kelo *Pinus sylvestri*s trunk (diam. 35 cm, length 71 dm, decay stage 4), in a sub-xeric heath forest with some paludification and a history of selective logging and forest fire, 8 Sep 2021 leg. & det. PV 3819.1 (H).

Myxarium crystallinum D.A. Reid

Fig. 31

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Kajaani, Pyykönpuro, 71219 N, 5332 E, on a fallen trunk of *Prunus padus* (diam. 5 cm, decay stage 4) in a young deciduous thicket forest, 15 Oct 2022, leg. & det. TH 20221110, conf. MK (OULU).

Myxarium fugacissimum (Bourdot & Galzin) Malysheva & Spirin

Fig. 32

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Hyrynsalmi, Peuravaara, 71705 N, 5567 E, on a fallen trunk of *Picea abies* (diam. 35 cm, decay stage 4) in a spruce-dominated old-growth mesic heath forest with a substantial amount of dead wood, 11 Sep 2022, leg. & det. TH 20220492 (OULU); Kuhmo, Ulvinsalo, 71004 N, 6649 E, on a fallen trunk of *Picea abies* (diam. 35 cm, decay stage 4) in a spruce-dominated old-growth mesic heath forest with a substantial amount of dead wood, 3 Oct 2020, leg. TH 20200021, det. VS (OULU, H).

Myxarium grilletii (Boud.) D.A. Reid

Fig. 33

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Kajaani, Pöllyvaara, 7123 N, 535 E, on a fallen branch of deciduous tree (diam. 2 cm, decay stage 4) in a spruce-dominated mesic heath forest, 20 Sep 2017, leg. & det. TH 201710632 (OULU).

Myxarium mesomorphum (Bourdot & Galzin) Hauerslev

Fig. 34

DISTRIBUTION: New to 3b. 3rd record in Finland; previous records: Helsinki (1b), and Tammela (2a) (Spirin et al. 2019b, FinBIF 2024c).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Kajaani, Karolineburg, 71229 N, 5355 E, on a fallen branch of *Betula* sp. (diam. 8 cm, decay stage 3) in a spruce-dominated herb-rich forest, 29 Oct 2021, leg. TH 20210910, det. TH & VS (OULU).

Myxarium minutissimum (Höhn.) Spirin & Trichies

Fig. 35

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Kajaani, Karolineburg, 71229 N, 5355 E, on a fallen branch of *Prunus padus* (diam. 2 cm, decay stage 3) in a spruce-dominated herb-rich forest, 12 Aug 2022, leg. & det. TH 20220271, conf. MK (OULU); on a fallen branch of deciduous tree (diam. 2 cm, decay stage 3) in spruce-dominated herb-rich forest, 12

Fig. 31. *Myxarium crystallinum* in Kajaani (TH20221110). Photo: Teppo Helo

Fig. 32. *Myxarium fugacissimum* in Hyrynsalmi (TH20220492). Photo: Teppo Helo

Fig. 33. *Myxarium grilletii* in Kajaani (TH201710632). Photo: Teppo Helo

Fig. 34. *Myxarium mesomorphum* in Kajaani (TH20210910). Photo: Teppo Helo

Aug 2022, leg. & det. TH 20220224, conf. MK (OULU).

Myxarium podlachicum (Bres.) Raitv. **Fig. 36**

DISTRIBUTION: New to 3b. 3rd record in Finland; previous records: Helsinki (2a), and Hämeenlinna (2a) (Spirin et al. 2019b, FinBIF 2024c).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Hyrynsalmi, Karhisenvaara, 71543 N:5874 E, on a fallen trunk of *Betula* sp. (diam. 12 cm, decay stage 3) in an old spruce-dominated mesic heath forest, 28 Sep 2018, leg. TH 2018177, det. VS (OULU).

Myxarium varium Hauerslev **Fig. 37**

DISTRIBUTION: New to 3a. 8th–9th records in Finland; previous records: Helsinki (1b, four sites), Hämeenlinna (2a), Pirkkala (2a), and Hyrynsalmi (3b) (Spirin et al. 2019b, FinBIF 2024c).
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Puolanka, Iso Jänisjärvi W, 7207556 N, 543461 E, on a corticated fallen trunk of *Betula* (diam. 12 cm, decay stage 4) in a spruce-dominated herb-rich forest along a stream, 6 Sep 2023, leg. & det. MK 10/6.9.2023 (OULU); Ostrobottnia ouluensis, Oulu, Kontinkangas, 7209776 N, 429718 E, on a fallen trunk of *Populus tremula* (decay stage 3) in a *Populus tremula*-dominated herb-rich heath forest, 5 Sep 2021, leg. & det. AM 717, conf. VS & MK (OULU).

Paullicorticium ansatum Liberta

DISTRIBUTION: 4th–6th records in Finland; previous records: Lammi (2a), Padasjoki (2a), and Kuhmo (3b) (Kotiranta et al. 2009, Kunttu et al. 2021).
NOTES: Near Threatened (NT).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Hyrynsalmi, Peuravaara, 71705 N, 5567 E, on a fallen trunk of *Picea abies* (diam. 35 cm, decay stage 4) in a spruce-dominated old-growth mesic heath forest with a substantial amount of dead wood, 11 Sep 2022, leg. & det. TH 20220520 (OULU); Sotkamo, Lauttolampi, 71158 N, 5434 E, on a fallen trunk of *Picea abies* (diam. 40 cm, decay stage 4) in a spruce-dominated herb-rich forest, 22 Sep 2022, leg. & det. TH 20220634 (OULU); Sotkamo, Losonvaara, 7104 N, 546 E, on a fallen trunk of *Picea abies* (diam. 30 cm, decay stage 4) in an old spruce-dominated mesic heath forest, 6 Aug 2023, leg. & det. TH 20230229 (OULU).

Paullicorticium globosum Oberw.

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Suomussalmi, Koisti, 71743 N, 5998 E, on a fallen trunk of *Picea abies* (diam. 30 cm, decay stage 3) with *Repetobasidium vestitum* and *Peniophorella praetermissa* in an old-growth spruce-dominated mesic heath forest with a substantial amount of dead wood, 26 Aug 2023, leg. & det. TH 20230060, conf. MK (OULU).

Paullicorticium pearsonii (Bourdot) J. Erikss.

DISTRIBUTION: 9th–13th records in Finland; previous records: Helsinki (1b, two sites), Inkoo (1b, two sites), Kemiönsaari (1b), Rautalampi (2b), Toivakka (2b), and Sotkamo (3b) (Kotiranta et al. 2009, Kunttu et al. 2016, 2020).
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Sotkamo, Lontanniemi, 71160 N, 5435 E, on fallen trunk of P*icea abies* (diam. 50 cm, decay stage 4) with *Botryobasidium intertextum* in a spruce-dominated herb-rich forest, 18 Oct 2021, leg. & det. TH 20210779 (OULU); Sotkamo, Viltonvaara, 7081 N, 561 E, on a trunk of *Picea abies* (diam. 20 cm, decay stage 3) in an old spruce-dominated mesic heath forest, 18 Sep 2022, leg. & det. TH 20220540 (OULU); Paltamo, Ellukka, 7141 N, 532 E, on a fallen trunk of *Picea abies* (diam. 40 cm, decay stage 4) in a spruce-dominated herb-rich forest, 1 Oct 2022, leg. & det. TH 20220849 (OULU); Suomussalmi, Koisti, 71743 N, 5998 E, on a fallen trunk of *Picea abies* (diam. 30 cm, decay stage 4) in an old-growth spruce-dominated mesic heath forest with a substantial amount of dead wood, 26 Aug 2023, leg. & det. TH 20230062 (OULU); Puolanka, Mustakumpu, 71695 N, 5511 E, on a fallen trunk of *Picea abies* (diam. 35 cm, decay stage 2) with *Botryobasidium subcoronatum* and *Athelia decipiens* in old-growth spruce-dominated mesic heath forest with a substantial amount of dead wood, 27 Aug 2023, leg. & det. TH 20230510 (OULU).

Peniophora erikssonii Boidin

DISTRIBUTION: New to 3b.

Fig. 35. *Myxarium minutissimum* in Kajaani (TH20220224). Photo: Teppo Helo

Fig. 36. *Myxarium podlachicum* in Hyrynsalmi (TH2018177). Photo: Teppo Helo

Fig. 37. *Myxarium varium* in Puolanka (MK 10/6.9.2023). Photo: Matti Kulju

Fig. 38. *Phaeotremella fimbriata* in Kuhmoinen (JP5491). Photo: Jorma Pennanen

SPECIMEN EXAMINED: Ostrobottnia kajanensis, Puolanka, Iso Jänisjärvi W, 7207285 N, 543425 E, on a corticated branch of *Alnus incana* (diam. 0,5 cm) in a spruce-dominated herb-rich forest along a stream, 6 Sep 2023, leg. & det. MK 30/6.9.2023 (OULU).

Peniophorella pallida (Bres.) K.H. Larss.

DISTRIBUTION: New to 4b.
SPECIMEN EXAMINED: Lapponia sompiensis, Savukoski, Maltio Strict Nature Reserve, 7477498 N, 564643 E, on a burned stump of *Pinus sylvestris* (diam. 30 cm, decay stage 3) in an old-growth xeric heath forest with a lot of charred dead wood, 31 Aug 2021, leg. & det. JP 5349 (H).

Perenniporia tenuis (Schwein.) Ryvarden

DISTRIBUTION: 7th record in Finland; previous records: Tammela (2a, RE), Savonranta (2b), Ilomantsi (3b), Lieksa (3b, two sites), Kuhmo (3b) (Kotiranta et al. 2009, Kunttu et al. 2014).
NOTES: Critically endangered (CR).
SPECIMEN EXAMINED: Karelia borealis, Lieksa, Kämmenvaara, 7049611 N, 642406 E, on a fallen large *Populus tremula* trunk, 12 Sep 2021, leg. Joni-Matti Kusmin, det. PV (J.-M.K.).

Phaeotremella fimbriata (Pers.) Spirin & V. Malysheva **Fig. 38**

DISTRIBUTION: New to 2a. 2nd record in Finland; previous record: Kouvola (2b) (FinBIF 2024c).
SPECIMEN EXAMINED: Tavastia australis, Kuhmoinen, Kissakulma, 6820758 N, 405209 E, on a whole fallen trunk *Alnus incana* (diam. 15 cm, decay stage 3) in a herb-rich forest, 1 Oct 2023, leg. & det. JP 5491 (OULU).

Phanerochaete deflectens (P. Karst.) Hjortstam

DISTRIBUTION: New to 3a and 4b.
SPECIMENS EXAMINED: Ostrobottnia ouluensis, Oulu, Metelinkangas, 7204330 N, 431716 E, on a decorticated fallen trunk of a deciduous tree (diam. 10 cm, decay stage 4) in a mixed forest, 9 Oct 2022, leg. MK 189/22*, det. KHL (OULU); Oulu, Pilpaoja, 7207861 N, 439081 E, on a fallen trunk of *Populus tremula* (decay stage 2) in a mesic heath forest along a stream, 18 Jul 2021, leg. & det. AM 586, conf. MK (OULU); Lapponia kittilensis, Muonio, Pallas – Ounastunturi National Park, 7510094 N, 382943 E, on a whole fallen trunk of *Alnus incana* (diam. 15 cm, decay stage 3) in a moist mesic heath forest, 3 Sep 2013, leg. JP 2635 (OULU), det. MK.

Phlebia femsioeensis (Litsch. & Lund.) J. Erikss. & Hjortstam

DISTRIBUTION: 7th record in Finland; previous records: Hämeenlinna (2a), Koski (2a), Kajaani (3b), Kuhmo (3b), Pudasjärvi (3b), and Suomussalmi (3b) (Kotiranta et al. 2009, Kunttu et al. 2013, 2015, 2018).
SPECIMEN EXAMINED: Nylandia, Lohja, Porkanmäki, 6694458 N, 338659 E, on a piece of stump of *Picea abies* (diam. 5 cm, decay stage 3) in a rocky terrain forest, 6 Oct 2023, leg. & det. JP 5516 (OULU).

Phlebia subserialis (Bourdot & Galzin) Donk

DISTRIBUTION: New to 3a. 10th record in Finland; previous records: Helsinki (1b, two sites), Kemiönsaari (1b, two sites), Hamina (2a), Tammela (2a), and Inari (4c; three sites) (Kotiranta et al. 2009, FinBIF 2024c).
SPECIMEN EXAMINED: Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7011645 N, 388643 E, on a whole fallen kelo trunk of *Pinus sylvestris* (decay stage 1) in an old-growth sub-xeric heath forest, 16 Sep 2023, leg. & det. JP 5398, conf. MK (OULU).

Polyozellus alobatus (Svantesson) Svantesson & Kõljalg

DISTRIBUTION: 2nd record in Finland; previous record: Kajaani (3b) (Kunttu et al. 2021).
SPECIMEN EXAMINED: Regio aboënsis, Kemiönsaari, Granholmen, 6674572 N, 245358 E, on a fallen trunk of *Betula* (diam. 35 cm, decay stage 4) on the sunny edge of a coastal forest, 16 Sep 2021, leg. HL 16.9.2021/11*, det. TK (OULU).

Polyozellus flavovirens (Höhn. & Litsch.) Svantesson & Kõljalg **Fig. 39**

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Puolanka, Surkea, 7181696 N, 538023 N, on a decorticated fallen trunk of *Picea abies* (diam. 30 cm, decay stage 4) in a spruce-dominated herb-rich forest, 9 Aug 2023, leg. & det. MK 49/9.8.2023 (OULU); Sotkamo, Losonvaara, 7104 N, 546 E, on a fallen trunk of *Picea abies* (diam. 12 cm, decay stage 4) in a spruce-dominated mesic heath forest, 27 Aug 2022, leg. & det. TH 20220384*, conf. MK (OULU); Sotkamo, Viltonvaara, 7081 N, 561 E, on a fallen trunk of *Picea abies* (diam. 12 cm, decay stage 3) in an old spruce-dominated mesic heath forest, 18 Sep 2022, leg. & det. TH 20220554*, conf. MK (OULU).

Polyozellus humicola M. J. Larsen

DISTRIBUTION: 8th–10th records in Finland; previous records: Helsinki (1b), Ylöjärvi (2a), Lieksa (3b), Puolanka (3b), Kuusamo (4a), and Sodankylä (4b; two sites) (Kotiranta et al. 2009, Kunttu et al. 2019, FinBIF 2024c).
NOTES: Data Deficient (DD).
SPECIMENS EXAMINED: Regio aboënsis, Vihti, Nuuksio National Park, 6687488 N, 360157 E, on a whole fallen trunk of *Pinus sylvestris* (diam 25 cm, decay stage 4) in a *Picea abies*-dominated mesic heath forest, 20 Sep 2021, leg. & det. JP 4782 (H); Ostrobottnia kajanensis, Suomussalmi, Koisti, 7174 N, 599 E, on a fallen trunk of *Pinus sylvestris* (diam. 40 cm, decay stage 4, kelo tree) in an old-growth pine-dominated mesic heath forest with a substantial amount of dead wood, 3 Sep 2023, leg. & det. TH 20230603 (OULU); Sotkamo, Losonvaara, 7103 N, 544 E, on a fallen trunk of *Juniperus communis* (diam. 5 cm, decay stage 4) in a spruce-dominated mesic heath forest, 29 Aug 2021, leg. & det. TH 20210102, conf. MK (OULU).

Polyozellus plurilobus (Svantesson) Svantesson & Kõljalg **Fig. 40**

DISTRIBUTION: New to 3b. 2nd record in Finland; previous record: Loviisa (2a) (Svantesson et al. 2019).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Kajaani, Karolineburg, 71229 N, 5355 E, on fallen trunk of deciduous tree (diam. 25 cm, decay stage 4) in a spruce-dominated herb-rich forest, 12 Aug 2022, leg. & det. TH 20220232* (OULU).

Polyozellus sciastrus (Svantesson & Kõljalg) Svantesson & Kõljalg **Fig. 41**

DISTRIBUTION: New to 3b. 4th–7th records in Finland; previous records: Lammi (2a), Jyväskylä (2b), and Oulu (3a) (Svantesson et al. 2019, Kunttu et al. 2021).
SPECIMENS EXAMINED: Regio aboënsis, Kemiönsaari, Biskopsö, 6657768 N, 250091 E, on a fallen branch of *Salix caprea* (diam. 12 cm, decay stage 2), leg. PK 7599, det. JP & Sten Svantesson (TUR); Ostrobottnia kajanensis, Paltamo, Yölinnunkuru, 7148487 N, 528174 E, on a corticated root of *Picea abies* (diam. 5 cm, decay stage 2) in a spruce-dominated herb-rich forest, 25 Aug 2023, leg. & det. MK 24/25.8.2023 (OULU); Ristijärvi, Saukkovaara, 7148 N, 559 E, on a fallen trunk of *Populus tremula* (diam. 7 cm, decay stage 2) in a young mixed mesic heath forest, 12 Oct 2018, leg. & det. TH 201810004 (OULU); Kajaani, Patjamäki, 7112 N, 490 E, on a fallen trunk of *Populus tremula* (diam. 15 cm, decay stage 3) in an old pine-dominated mesic heath forest, 30 Oct 2021, leg. TH 20211000*, det. MK (OULU); Sotkamo, Lauttolampi, 71158 N, 5434 E, on a fallen trunk of *Populus tremula* (diam. 8 cm, decay stage 3) in a spruce-dominated herb-rich forest, 22 Sep 2022, leg. TH 20220673, det. MK (OULU); Paltamo, Yölinnunkuru, 71484 N, 5281 E, on a fallen trunk of *Betula* sp. (diam. 10 cm, decay stage 3) in a spruce-dominated herb-rich forest, 19 Aug 2023, leg. & det. TH 20230443 (OULU).

Polyozellus tristis (P. Karst.) Svantesson & Kõljalg **Fig. 42**

DISTRIBUTION: New to 3b. 4th record in Finland; previous records regarding *P. tristris* s. str.: Lammi (2a), Luvia (2a), and Tammela (2a) (Svantesson et al. 2019).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Sotkamo, Lauttolampi, 71159 N, 5434 E, on a fallen trunk of *Picea abies* (diam. 6 cm, decay stage 1) in a spruce-dominated herb-rich forest, 5 Aug 2022, leg. TH 20220037*, det. MK (OULU).

Postia balsamina Niemelä & Y.C. Dai

DISTRIBUTION: 4th record in Finland; previous

Fig. 39. *Polyozellus flavovirens* in Sotkamo (TH20220554). Photo: Teppo Helo

Fig. 40. *Polyozellus plurilobus* in Kajaani (TH20220232*). Photo: Teppo Helo

Fig. 41. *Polyozellus sciastrus* in Ristijärvi (TH201810004). Photo: Teppo Helo

Fig. 42. *Polyozellus tristis* s. str. in Sotkamo (TH20220037). Photo: Teppo Helo

records: Helsinki (1b), Riihimäki (2a), and Kolari (4b) (Kotiranta et al. 2009, FinBIF 2024c).
NOTES: Vulnerable (VU).
SPECIMEN EXAMINED: Regio kuusamoënsis, Taivalkoski, Syöte National Park, 7288652 N, 562206 E, on a whole fallen trunk of *Picea abies* (diam 40 cm, decay stage 3) in an old-growth *Picea abies*-dominated mesic heath forest, 6 Sep 2022, leg. & det. JP 4986 (H).

Proterochaete adusta (Burt) Spirin & Malysheva

Fig. 43

DISTRIBUTION: New to 3a. 3rd record in Finland; previous records: Hämeenlinna (2a), and Kuhmo (3b) (Kunttu et al. 2021, FinBIF 2024c).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Kajaani, Patjamäki, 71128 N, 4907 E, on a fallen trunk of *Populus tremula* (diam. 30 cm, decay stage 4) in an old spruce-dominated mesic heath forest, 31 Oct. 2021, leg. & det. TH 20211019* (OULU).

Protoacia delicata V. Spirin & V. Malysheva

Fig. 44

DISTRIBUTION: New to Finland and hence new to 3a and 3b.
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Puolanka, Surkea, 7181696 N, 538023 E, on a decorticated fallen trunk of *Picea abies* (diam. 30 cm, decay stage 4) in a spruce-dominated herb-rich forest, 9 Aug 2023, leg. & det. MK 47/9.8.2023 (OULU); Paltamo, Teerivaara, 71432 N, 5140 E, on a fallen trunk of *Pinus sylvestris* (diam. 10 cm, decay stage 3) in an old-growth xeric heath forest with a substantial amount of dead wood, 19 Aug 2023, leg. & det. TH 20230435 (OULU); Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7010141 N, 390364 E, on a whole fallen kelo trunk of *Pinus sylvestris* (diam. 13 cm, decay stage 1) in an old-growth sub-xeric heath forest, 20 Sep 2023, leg. & det. JP 5470 (OULU).

Protodontia subgelatinosa (P. Karst.) Pilat

DISTRIBUTION: 10th–12th records in Finland; previous records: Helsinki (1b; two sites), Kangasala (2a), Tammela (2a), Luhanka (2b), Petäjävesi (2b), Oulu (3a), Sonkajärvi (3b), and Enontekiö (4d) (Kotiranta et al. 2009, Kunttu et al. 2012, 2018, 2020, Miettinen 2012).
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Paltamo, Teerivaara, 71433 N, 5140 E, on long decayed pieces of wood (diam. 5–8 cm, decay stage 5) in a pine-dominated old-growth xeric heath forest, 19 Aug 2023, leg. & det. TH 20230419 (OULU); Puolanka, Pihlajavaara, 71864 N, 5386 E, on a fallen trunk of *Alnus incana* (diam. 15 cm, decay stage 3) in a spruce-dominated herb-rich forest, 9 Aug 2022, leg. & det. TH 20220197 (OULU); Ristijärvi, Saukkovaara, 71478 N, 5575 E, on a fallen trunk of *Sorbus aucuparia* (diam. 8 cm, decay stage 4) in a spruce-dominated herb-rich forest, 10 Sep 2023, leg. & det. TH20230730 (OULU).

Punctularia strigosozonata (Schwein.) P.H.B. Talbot

DISTRIBUTION: 9th–10th records in Finland; previous records: Porvoo (2a), Kouvola (2a), Vehkalahti (2a), Savonranta (2b, two sites), Ilomantsi (2b and 3b; two sites), and Lieksa (3b) (Kotiranta et al. 2009, Kunttu et al. 2021).
NOTES: Vulnerable (VU).
SPECIMENS EXAMINED: Tavastia australis, Kouvola, Valkialamminmäki, 6771236 N, 461173 E, on standing dead *Populus tremula* (diam. 10 cm, decay stage 1), on a steep slope of a mesic herb-rich forest dominated by *Picea abies,* 19 Sep 2023, leg. & det. PV 6327; Savonia borealis, Heinävesi, Hoikanjoki, 6942957 N, 583046 E, on beaver felled *Populus tremula* trunk, occurred copiously along the length of the trunk (diam. 35 cm, decay stage 2), in a beaver flooded *Picea abies*-dominated riverside mire, old-growth forest with some history of felling, 10 Oct 2023, leg. & det. PV 6476.

Pycnoporellus alboluteus (Ellis & Everh.) Kotl. & Pouzar

DISTRIBUTION: 9th record in Finland; previous records: Puolanka (3b), Pudasjärvi (3b), Pisavaara, Tervola (3c), Rovaniemi (3c, 4c), Taivalkoski (4a, several sites), and Kemijärvi (4b). (Kotiranta et al. 2009, Kunttu et al 2015, Kunttu et al. 2016).
NOTES: Endangered (EN).
SPECIMEN EXAMINED: Nylandia, Lapinjärvi, Latokartano research forest, 6724513 N, 451891 E, on a broken and fallen trunk of *Picea abies* (diam. 25 cm, decay stage 3), together with *Phellinus ferrug-*

Fig. 43. *Proterochaete adusta* in Kajaani (TH202110l9). Photo: Teppo Helo

Fig. 44. *Protoacia delicata* in Kivijärvi (JP5470). Photo: Jorma Pennanen

ineofuscus, *Crustoderma dryinum*, *Fomitopsis pinicola*, *Antrodia serialis*, *Asterodon ferruginosus* and *Pycnoporellus fulgens*, in a *Picea abies* stand with a 10–15-year-old ongoing patch scale replacement dynamic caused by bark beetles, mesic heath forest mixed with spruce mires, 18 May 2022 leg. & det. PV, conf. Tuomo Niemelä.

Ramaricium alboochraceum (Bres.) Jülich

Fig. 45

DISTRIBUTION: New to 3b. 4th record in Finland; previous records: Jämsä (2b), Toivakka (2b), and Kuusamo (4a) (Kotiranta et al. 2009).
NOTES: Near Threatened (NT).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Paltamo, Yölinnunkuru, 7148466 N, 528180 E, on a partly decorticated twig of *Picea abies* (diam. 0,2 cm) in a spruce-dominated herb-rich forest, 6 Aug 2023, leg. & det. MK 17/6.8.2023 (OULU).

Ramariopsis hirtipes (Fr.) Corner

Fig. 46

DISTRIBUTION: New to Finland and hence new to 3a and 4b.
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Oulu, Kiiminki, Isohalmeenmaa, 7225060 N, 445669 E, in a herb-rich mixed forest, 28 Aug 2022, leg. MK 78/22* & MV, det. TK (OULU); Ostrobottnia ultima, Rovaniemi, Kivitaipale, 7360686 N, 450559 E, in calcareous roadside grass, 25 Aug 2018, leg. & det. TK Kekki3192* (OULU).

Repetobasidium conicum (Oberw.) J. Eriksson & Hjortstam

Fig. 47

DISTRIBUTION: New to Finland and hence new to 3a.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Paltamo, Teerivaara, 71432 N, 5140 E, on a fallen trunk of *Pinus sylvestris* (diam. 25 cm, decay stage 4, kelo tree) in an old-growth xeric heath forest with a substantial amount of dead wood, 19 Aug 2023, leg. & det. TH 20230438, conf. MK (OULU).

Repetobasidium vestitum J. Erikss. & Hjortstam

Fig. 48

DISTRIBUTION: New to 3b. 3rd record in Finland; previous records: Lohja (1b), and Kuusamo (4a) (Kotiranta et al. 2009, FinBIF 2024c).
NOTES: Data Deficient (DD).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Suomussalmi, Koisti, 71743 N, 5998 E, on a fallen trunk of *Picea abies* (diam. 30 cm, decay stage 3) with *Peniophorella praetermissa* and *Paullicorticium globosum* in an old-growth spruce-dominated mesic heath forest with a substantial amount of dead wood, 26 Aug 2023, leg. & det. TH 20230060, conf. MK (OULU).

Rhizochaete sulphurina (P. Karst.) K.H. Larss.

DISTRIBUTION: New to 3a.
NOTES: Vulnerable (VU).
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Oulu, Pilpaoja, 7207942 N, 439083 E, on a fallen trunk of *Populus tremula* (decay stage 3) in a mesic heath forest along a stream, 19 Aug 2021, leg. & det. AM 656, conf. MK (OULU).

Scytinostromella heterogenea (Bourdot & Galzin) Parmasto

DISTRIBUTION: 8th record in Finland; previous records: Lohja (1b), Parainen (1b), Turku (1b), Janakkala (2a), Lempäälä (2a), Vesilahti (2a), and Muonio (4c) (Kotiranta et al. 2009, FinBIF 2024c)
SPECIMEN EXAMINED: Tavastia australis, Loppi, Siippasuo, 6738148 N, 363211 E, on a logging residue of *Picea abies* (diam. 7 cm, decay stage 2) in a logging area, 31 Aug 2022, leg. Reijo Penttilä, det. JP 4965 (H).

Sebacina dimitica Oberw.

Fig. 49

DISTRIBUTION: New to 3b and 3c. 3rd–7th record in Finland; previous records: Finström (1a), and Utsjoki (4d) (FinBIF 2024c).
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Paltamo, Melalahti, 71425 N, 5313 E, on a fallen trunk of deciduous tree (diam. 6 cm, decay stage 3) with *Scopuloides rimosa* in a young spruce-dominated mesic heath forest, 13 Aug 2022, leg. & det. TH 20220292 (OULU); Paltamo, Ellukka, 71414 N, 5329 E, on a fallen trunk of *Alnus incana* (diam. 10 cm, decay

Fig. 45. *Ramaricium alboochraceum* in Paltamo (MK 17/6.8.2023). Photo: Matti Kulju

Fig. 46. *Ramariopsis hirtipes* in Rovaniemi (TK3192). Photo: Tapio Kekki

stage 4) with *Piloderma byssinum* in a spruce-dominated herb-rich forest, 7 Oct 2022, leg. & det. TH 20220977 (OULU); Puolanka, Pihlajavaara, 7186 N, 538 E, on a fallen trunk of *Populus tremula* (diam. 10 cm, decay stage 3) in a spruce-dominated herb-rich forest, 23 Sep 2022, leg. & det. TH 20220678, conf. MK (OULU); Sotkamo, Lauttolampi, 71158 N, 5434 E, on a fallen trunk of *Alnus incana* (diam. 15 cm, decay stage 3) in a spruce-dominated herb-rich forest, 22 Sep 2022, leg. & det. TH 20220590 (OULU); Ostrobottnia ultima, Rovaniemi, Pisavaara Strict Nature Reserve, Kuusiloma, 7351884 N, 416400 E, on a moss-covered stump (decay stage 5) in an old spruce-dominated mesic heath forest, 18 Sep 2023, leg. MK 108/23 & et al., det. MK (OULU, H).

Serendipita vermifera (Oberw.) P. Roberts

DISTRIBUTION: New to Finland and hence new to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Sotkamo, Losonvaara, 7104 N, 546 E, inside of *Tomentella cinerascens* s. lat. on a fallen branch of *Populus tremula* (diam. 3 cm, decay stage 2) in old spruce-dominated mesic heath forest, 7 Aug 2023, leg. & det. TH 20230265 (OULU).

Sidera lunata (Romell ex Bourdot & Galzin) K.H. Larss. **Fig. 50**

DISTRIBUTION: New to 4c.
SPECIMEN EXAMINED: Regio Kuusamoënsis, Salla, Hirvasjoki, 7515050 N, 612600 E, on a whole fallen trunk of *Pinus sylvestris* (diam. 30 cm, decay stage 1–3) in an old *Pinus sylvestris*-dominated sub-xeric heath forest, 13 Jul 2022, leg. JJ1804 (OULU), det. MK.

Sistotrema autumnale Ryvarden & H. Solheim

DISTRIBUTION: New to 3a and 3c.
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Kajaani, Patjamäki, 71126 N, 4908 E, on a fallen trunk of *Populus tremula* (diam. 20 cm, decay stage 3) in an old pine-dominated mesic heath forest, 30 Oct. 2021, leg. & det. TH 20210984 (OULU); Ostrobottnia ultima, Rovaniemi, Pisavaara Strict Nature Reserve, Kuusiloma, 7351879 N, 416401 E, on a partly decorticated fallen trunk of *Populus tremula* (diam. 40 cm, decay stage 4) in an old herb-rich spruce-dominated forest, 7 Oct 2022, leg. MK 179/22 & et al., det. MK (OULU).

Sistotrema resinicystidium Hallenb.

DISTRIBUTION: New to 1b. 3rd–4th records in Finland; previous records: Saarijärvi (3a), and Rovaniemi (3c) (Kunttu et al. 2016, FinBIF 2024c)
SPECIMENS EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6666967 N, 250589 E, on an imported saw log of *Populus tremula* (diam. 45, decay stage 1, length 3 m), in a mesic heath forest, 25 Sep 2021, leg. PK 10378, det. MK (OULU); Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7011641 N, 389864 E, on a whole fallen kelo trunk *Pinus sylvestris* (diam 39 cm, decay stage 1) in an old-growth sub-xeric heath forest, 12 Sep 2023, leg. & det. JP 5340 (OULU).

Sistotrema subtrigonospermum D. P. Rogers

DISTRIBUTION: 2nd record in Finland; previous record: Sotkamo (3b) (Kunttu et al. 2021).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Sotkamo, Korkeakoskenpuro, 7086 N, 558 E, on a fallen branch of *Populus tremula* (diam. 4 cm, decay stage 3) in an old spruce-dominated mesic heath forest, 18 Sep 2021, leg. & det. TH 20210348 (OULU).

Sistotremastrum mendax Spirin & Volobuev **Fig. 51**

DISTRIBUTION: New to 3b. 3rd record in Finland; previous records: Miehikkälä (2a), and Pori (2a) (Spirin et al. 2021b).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Sotkamo, Viltonvaara, 7081 N, 561 E, on a trunk of *Picea abies* (diam. 25 cm, decay stage 4) in an old spruce-dominated mesic heath forest with a very large amount of dead wood, 3 Oct 2021, leg. & det. TH 20210596* (OULU).

Sistotremastrum vigilans K.H. Larss. & Spirin **Fig. 52**

Fig. 47. *Repetobasidium conicum* in Paltamo (TH20230438). Photo: Teppo Helo

Fig. 48. *Repetobasidium vestitum* with *Peniophorella praetermissa*, *Paullicorticium globosum* and *Xylodon* sp. in Suomussalmi (TH20230060). Photo: Teppo Helo

Fig. 49. *Sebacina dimitica* in Paltamo (TH20220977). Photo: Teppo Helo

Fig. 50. *Sidera lunata* in Salla (JJ1804). Photo: Jari Julkunen

Fig. 51. *Sistotremastrum mendax* in Sotkamo (TH20210596). Photo: Teppo Helo

Fig. 52. *Sistotremastrum vigilans* in Kuhmo (TH20201309). Photo: Teppo Helo

DISTRIBUTION: New to 3b. 4th record in Finland; previous records: Helsinki (1b, two sites), and Pori (2a) (Spirin et al. 2021b).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Kuhmo, Ulvinsalo, 7081 N, 561 E, on a trunk of *Picea abies* (diam. 40 cm, decay stage 3) in an old spruce-dominated mesic heath forest with very large amount of dead wood, 4 Oct 2020, leg. & det. TH 20201309, conf. MK (OULU).

Spiculogloea occulta P. Roberts

DISTRIBUTION: New to 3a.
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Oulu, Kontinkangas, 7209794 N, 429702 E, on a fallen trunk of *Populus tremula* (decay stage 4) with *Kurtia argillacea* in a *Populus tremula*-dominated herb-rich heath forest, 5 Sep 2021, leg. & det. AM 730, conf. MK (OULU).

Spiculogloea subminuta Hauerslev

DISTRIBUTION: New to 2a.
SPECIMEN EXAMINED: Nylandia, Sipoo, Box S, Spjutsundintie 283, Vårberga, lower C area, 6685099 N, 412577 E, on a rotten trunk of *Populus tremula* with *Botryobasidium subcoronatum* in a mesic mixed forest, 27 Sep 2021, leg. HV 26210, det. MK (H).

Steccherinum tenuispinum Spirin, Zmitr. & Malysheva **Fig. 53**

DISTRIBUTION: 9th record in Finland; previous records: Helsinki (1b; six sites), Kirkkonummi (1b), and Janakkala (2a) (Kotiranta et al. 2009, Kunttu et al. 2016, FinBIF 2024c).
SPECIMEN EXAMINED: Nylandia, Kirkkonummi, Strömsby, 6663270 N, 354282 E, on a dead fruiting body of *Fomitopsis pinicola* on a sawn *Picea abies* stump (diam. 50 cm, decay stage 3) in a moist mesic heath forest, 16 Oct 2023 leg. & det. JP 5597 (OULU).

Stypellopsis hyperborea Spirin & Malysheva

DISTRIBUTION: New to 1b. 6th record in Finland; previous records: Padasjoki (2a), Lieksa (3b, two sites), and Sodankylä (4b), and Inari (4c) (Spirin et al. 2018b, FinBIF 2024c).
NOTES: There are probably more specimens of this species in the herbaria under the name *Stypella vermiformis*.
SPECIMEN EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6667345 N, 250547 E, on a broken fallen trunk of *Pinus sylvestris* (diam. 23 cm, length 5 m, decay stage 4) with *Jaapia ochroleuca* in a mesic heath forest, 19 Sep 2021, leg. PK 10085, det. MK (OULU).

Suillosporium cystidiatum (D.P. Rogers) Pouzar

DISTRIBUTION: New to 3a. 4th–5th record in Finland; previous records: Lammi (2a), Korpilahti (2b), and Puolanka (3b) (Kotiranta et al. 2009, Kunttu et al. 2018).
SPECIMENS EXAMINED: Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7011166 N, 389582 E, on a whole fallen kelo trunk of *Pinus sylvestris* (diam. 14 cm, decay stage 1) in an old-growth sub-xeric heath forest, 13 Sep 2023, leg. & det. JP 5351 (OULU); Kivijärvi, Salamanperä Strict Nature Reserve, 7010391 N, 389864 E, on a whole fallen kelo trunk of *Pinus sylvestris* (decay stage 2) in an old sub-xeric heath forest, 20 Sep 2023, leg. & det. JP 5465 (OULU); Ostrobottnia kajanensis, Suomussalmi, Koisti, 7174 N, 599 E, on a fallen trunk of *Pinus sylvestris* (diam. 40 cm, decay stage 4, kelo tree) in a very old pine-dominated mesic heath forest with a substantial amount of dead wood, 3 Sep 2023, leg. & det. TH 20230607 (OULU).

Thanatephorus ochraceus (Massee) P. Roberts **Fig. 54**

DISTRIBUTION: New to 3b. 4th–5th records in Finland; previous records: Tuusula (2a), Vantaa (2a), and Jyväskylä (2b) (Kotiranta & Saarenoksa 1993, FinBIF 2024c).
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Puolanka, Iso Jänisjärvi, 7206882 N, 545142 E, on a decorticated fallen trunk of deciduous tree (diam. 5 cm, decay stage 1) in a spruce-dominated herb-rich forest, 11 Aug 2023, leg. & det. MK 24/11.8.2023

Fig. 53. *Steccherinum tenuispinum* in Kirkkonummi (JP5597). Photo: Jorma Pennanen

Fig. 54. *Thanatephorus ochraceus* in Kajaani (TH20220147). Photo: Teppo Helo

Fig. 55. *Thujacorticium zurhausenii* in Rovaniemi (PV2412). Photo: Pyry Veteli

Fig. 56. *Trechispora candidissima* in Rovaniemi (MK 171.22). Photo: Matti Kulju

(OULU); 7206690 N, 545108 E, on a corticated fallen trunk of *Betula* sp. (diam. 11 cm, decay stage 4) in a spruce-dominated herb-rich forest, 6 Sep 2023, leg. & det. MK 45/6.9.2023 (OULU); Kajaani, Pöllyvaara 71237 N, 5347 E, on a fallen trunk of *Alnus incana* (diam. 12 cm, decay stage 3) in a young deciduous herb-rich forest, 8 Aug 2022, leg. & det. TH 20220147 (OULU).

Thujacorticium zurhausenii (Bres.) Nakasone

Fig. 55

DISTRIBUTION: New to Finland, and hence new to 4b.
SPECIMEN EXAMINED: Ostrobottnia ultima, Rovaniemi, Rättiselkä, 7399097 N, 463763 E, on a fallen piece and partially standing kelo *Pinus sylvestris* (diam. 50 cm, decay stage 2–3), sub-xeric heath forest, some paludification, dominant *Pinus* cohort age c. 150–200 years, selective logging and forest fire history, 18 Sep 2020, leg. PV 2412, det. VS (H); Rovaniemi, Vanttauskoski, 7368460 N, 487991 E, in the roots of a long time age uprooted kelo *Pinus sylvestris* (diam. 35 cm, length 7,5 m, decay stage 3-4, trunk moss-covered) in a mixed *Pinus-Picea-Betula* stand with logging history but with a large volume of old dead wood, mesic heath type site with some paludification, 24 Sep 2020 leg. & det. PV 2482.

Trechispora candidissima (Schwein.) Bondartzev & Singer

Fig. 56

DISTRIBUTION: New to 3c.
NOTES: Near Threatened (NT).
SPECIMENS EXAMINED: Ostrobottnia ultima, Rovaniemi, Pisavaara Strict Nature Reserve, Kuusiloma, 7351936 N, 416375 E, on a moss covered fallen trunk of *Picea abies* (diam. 50 cm, decay stage 2) in an old spruce-dominated mesic heath forest, 7 Oct 2022, leg. MK 171/22 & et al., det. MK (OULU); 7351809 N, 416387 E, on a stump of *Picea abies* (decay stage 4), in an old spruce-dominated mesic heath forest, 7 Oct 2022, leg. MK 182/22 & et al., det. MK (OULU); 7351867 N, 416443 E, on a moss covered fallen trunk of *Picea abies* (diam. 50 cm, decay stage 4) in an old spruce-dominated mesic heath forest, 7 Oct 2022, leg. MK 180/22 & et al., det. MK (OULU).

Trechispora caucasica (Parmasto) Liberta

DISTRIBUTION: 5th record in Finland; previous records: Eckerö (1a), Kemiönsaari (1b), and Tammisaari (1b, two sites) (Kotiranta et al. 2009, Kunttu et al. 2012, 2015).
SPECIMEN EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6667738 N, 249808 E, on a cut stump of *Pinus sylvestris* (diam. 10 cm, length 0,1 m, decay stage 2) in a mesic heath forest, 20 Sep 2021, leg. PK 10154, det. MK (OULU).

Trechispora incisa K.H. Larss.

DISTRIBUTION: 3rd record in Finland; previous records: Lohja (1b), and Raasepori (1b) (Kunttu et al. 2021).
SPECIMEN EXAMINED: Regio aboënsis, Parainen, Granvik, 6683308 N, 237907 E, on a fallen trunk of *Salix caprea* (diam. 12, decay stage 3), in a deciduous-dominated herb-rich forest, 14 Nov 2021, leg. HL 14.11.2021/11, det. HL & MK & TH (OULU).

Trechispora invisitata ssp. ***hauerslevi*** (Jacks.) Liberta

DISTRIBUTION: 9th record in Finland; previous records: Kemiönsaari (1b, three sites), Parainen (1b), Hämeenlinna (2a), Pori (2a), Ulvila (2a), and Muurame (2b) (Kotiranta et al. 2009, Kunttu et al. 2009, 2012, 2020).
SPECIMENS EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6667564 N, 250837 E, on a saw log of *Picea abies* (diam. 4 cm, length 1,1 m, decay stage 4) in a mesic heath forest, 28 Sep 2021, leg. PK 10405, det. MK (OULU); 6667535 N, 250830 E, on a whole fallen trunk of *Picea abies* (diam. 26 cm, decay stage 2) with *Trechispora farinacea* and *Xenasmatella vaga* in a mesic heath forest, 28 Sep 2021 leg. PK 10407, det. MK (OULU); 6667164 N, 250148 E, on a broken fallen trunk of *Betula* sp. (diam. 8 cm, length 1 m, decay stage 3) in a mesic herb-rich forest, 20 Sep 2021 leg. PK 10189b, det. MK (OULU); 6667164 N, 250148 E, on a broken fallen trunk of *Betula* sp. (diam. 9 cm, length 1,1 m, decay stage 4) with *Botryobasidium subcoronatum* and *Peniophorella pubera* in a mesic heath forest, 20 Sep 201, leg. PK 10190, 10191, det. MK (OULU).

Trechispora laevis K. H. Larsson

Fig. 57

DISTRIBUTION: New to 4c.

Fig. 57. *Trechispora laevis* in Salla (JJ1800). Photo: Jari Julkunen

Fig. 58. *Trechispora nivea* in Puolanka (MK 66/11.8.2023). Photo: Matti Kulju

SPECIMEN EXAMINED: Regio kuusamoënsis, Salla, Hirvasjoki, 7517643 N, 610915 E, on a whole fallen trunk of *Pinus sylvestris* (diam. 30 cm, decay stage 4–5) in an old *Pinus sylvestris*-dominated sub-xeric heath forest, 11 Jul 2022, leg. JJ1800 (OULU), det. MK.

Trechispora minima K. H. Larss.

DISTRIBUTION: 8th record in Finland; previous records: Helsinki (1b, three sites), Kemiönsaari (1b), Tammisaari (1b), Rovaniemi (3c), and Sodankylä (4b) (Kotiranta et al. 2009, Kunttu et al. 2012, FinBIF 2024).
SPECIMENS EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6667731 N, 249808 E, on a whole fallen trunk of *Pinus sylvestris* (diam. 13 cm, decay stage 2) in a mesic heath forest, 20 Sep 2021, leg. PK 10158, 10159b, det. MK (OULU); 6667484 N, 250397 E, on a broken fallen trunk of *Pinus sylvestris* (diam. 11 cm, length 3,2 m, decay stage 2) in a mesic heath forest, 30 Sep 2021, leg. PK 10492a, det. MK (OULU); 6667439 N, 250496 E, on a broken fallen trunk of *Betula* sp. (diam. 15 cm, length 3 m, decay stage 3) in a spruce mire, 25 Sep 2021, leg. PK 10338b, det. MK (OULU).

Trechispora minuta K.H. Larsson

DISTRIBUTION: New to 2b.
SPECIMEN EXAMINED: Savonia borealis, Iisalmi, Saunaniemi, 7047334 N, 513898 E, on a decorticated piece of *Picea abies* trunk (diam. 20 cm, decay stage 4) in a spruce-dominated mixed forest, 2 Sep 2021, leg. Ossi Ryhänen 3b/2921, det. KHL (OULU).

Trechispora nivea (Pers.: Fr.) K.H. Larss. **Fig. 58**

DISTRIBUTION: New to 3b.
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Puolanka, Pihlajavaara, 7187888 N, 539549 E, on a partly decorticated fallen trunk of *Sorbus aucuparia* (diam. 10 cm, decay stage 4) in a spruce-dominated herb-rich forest, 10 Aug 2023, leg. & det. 46/10.8.2023 (OULU); Puolanka, Iso Jänisjärvi, 7206859 N, 545111 E, on a partly decorticated fallen trunk of *Betula* (diam. 6 cm, decay stage 3) in a spruce-dominated herb-rich forest, 11 Aug 2023, leg. & det. MK 66/11.8.2023 (OULU).

Trechispora stellulata (Bourd. & Galz.) Liberta

DISTRIBUTION: New to 3a.
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Oulu, Hevossaari, 7210769 N, 426729 E, on a fallen trunk of deciduous tree (diam. 3 cm, decay stage 4) in a mesic herb-rich deciduous-dominated forest, 22 Sep 2023, leg. & det. PJ 220923_24c, conf. MK (OULU).

Trechispora tenuicula (Litsch.) K. H. Larss.

DISTRIBUTION: New to 3a.
SPECIMEN EXAMINED: Ostrobottnia ouluensis, Liminka, Kirkonkylä, 7188766 N, 425070 E, on a leaf and fern litter in a yard, 10 Sep 2023, leg. & det. PJ 100923_6, conf. MK (OULU).

Tremella coppinsii Diederich & G. Marson **Fig. 59**

DISTRIBUTION: New to 2b and 3b. 2nd–4th records in Finland; previous record: Hämeenlinna (2a) (Pykälä et al. 2023, J. Pykälä pers. comm.).
NOTES: While the type specimen of *Tremella coppinsii* is from Malaysia, the species distribution includes Northern Europe, and our specimens fit the description of *T. coppinsii* (Diederich & Marson 1988, Diederich et al. 2022). We are publishing these records although we think the identity of the European *T. coppinsii* should be verified by comparing the sequences of the Malaysian and the European specimens. As far as we know, no public Malaysian *T. coppinsii* sequence is available.
SPECIMENS EXAMINED: Tavastia australis, Hämeenlinna, Marjasuo, 6788361 N, 394301 E, on a *Platismatia glauca* thallus growing on a lower branch of a dead stump of *Picea abies* (diam. 15 cm, decay stage 1) in an old *Picea abies*-dominated herb-rich heath forest, 25 Sep 2021, leg. & det. JJ1618 (H); Savonia borealis, Kuopio, Huutavanholma, 7017337 N, 551420 E, on a *Platismatia glauca* thallus growing on a lower branch of a living *Picea abies* (diam. 15 cm) in a mature *Picea abies*-dominated mesic heath forest, 6 Jun 2022, leg. & det. JJ1834 (J.J.); Regio Karelia borealis, Rautavaara, Tiilikkajoki, 7033274 N, 554936 E, on a *Platismatia glauca* thallus growing on a lower branch of a living *Picea abies* (diam. 15 cm) in a *Picea abies*-dominated thin-peated spruce mire, 29 Sep 2023, leg. & det. JJ1968 (OULU).

Tretomyces lutescens (J. Erikss. & Ryvarden) K.H. Larss., Kotir. & Saaren. **Fig. 60**

Fig. 59. *Tremella coppinsii* in Hämeenlinna (JJ1618). Photo: Jari Julkunen

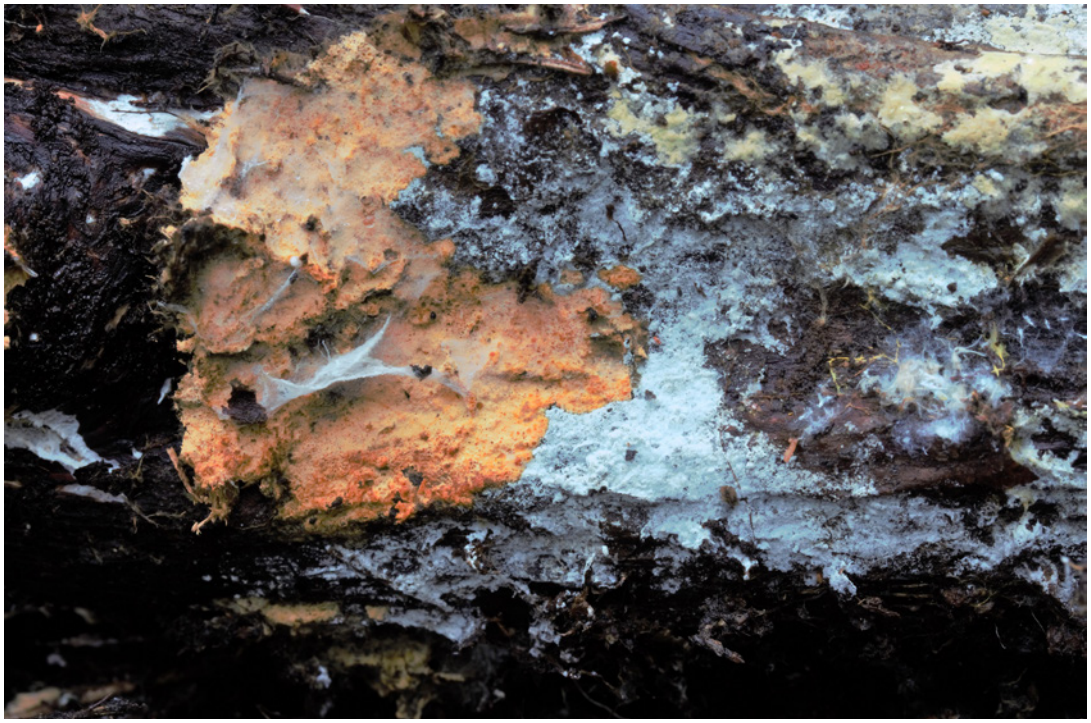

Fig. 60. *Tretomyces lutescens* in Kristiinankaupunki (HL 71120214). Photo: Hannu Lehtonen

Fig. 61. *Tubulicrinis confusus* in Suomussalmi (TH20230068). Photo: Teppo Helo

Fig. 62. *Tubulicrinis hirtellus* in Suomussalmi (TH20230010). Photo: Teppo Helo

DISTRIBUTION: New to Finland and hence new to 3a.
SPECIMEN EXAMINED: Ostrobottnia australis, Kristiinankaupunki, Karijoki, 6917731 N, 221474 E, on a dead standing trunk of *Juniperus communis* (diam. 10 cm, decay stage 1–2) in a heath forest, 7 Nov 2021, leg. HL 7.11.2021/4, det. MK (OULU).

Tubulicrinis accedens (Bourd. & Galz.) Donk

DISTRIBUTION: New to 3c and 4 c.
SPECIMENS EXAMINED: Ostrobottnia ultima, Tervola, Pisavaara Strict Nature Reserve, Vähäloma, 7350630 N, 411926 E, on a moss-covered fallen trunk of *Picea abies*? (diam. 14 cm, decay stage 4), in an old spruce-dominated mesic heath forest, 23 Sep 2021, leg. MK 59/21 & TK, det. MK (OULU); Lapponia sompiensis, Savukoski, Pierkulinaapa, 7522062 N, 599871 E, on fallen trunk pieces of *Pinus sylvestris* sunk into the ground (diam. 10-40 cm, decay stage 1-3) in a naturally open (due to the low yearly average temperature) mineral soil glade, 10 Jul 2022, leg. & det. JJ1786 (OULU), conf. MK.

Tubulicrinis confusus K. H. Larss. & Hjortstam

Fig. 61

DISTRIBUTION: New to 3b. 3rd record in Finland; previous records: Pori (2a), and Rovaniemi (3c) (Kotiranta et al. 2009).
NOTES: Data Deficient (DD).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Suomussalmi, Koisti, 71743 N, 5998 E, on a fallen trunk of *Pinus sylvestris* (diam. 40 cm, decay stage 3, kelo tree) in an old-growth pine-dominated sub-xeric heath forest with a substantial amount of dead wood, 26 Aug 2023, leg. & det. TH 20230068* (OULU).

Tubulicrinis globisporus K.-H. Larsson & Hjortst.

DISTRIBUTION: New to 4b. 7th–8th records in Finland; previous records: Padasjoki (2a), Kuhmo (3b, two sites), Puolanka (3b), and Inari (4c, two sites) (Kotiranta et al. 2009, Kunttu et al. 2019, 2021)
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Suomussalmi, Koisti, 71743 N, 5998 E, on a fallen trunk of *Pinus sylvestris* (diam. 20 cm, decay stage 4, kelo tree) in old-growth pine-dominated sub-xeric heath forest with a substantial amount of dead wood, 26 Aug 2023, leg. & det. TH 20230012 (OULU); Lapponia sompiensis, Savukoski, Maltio Strict Nature Reserve, 7481174 N, 563886 E, on a piece of stump of *Pinus sylvestris* (diam. 15 cm, decay stage 3) in an old-growth xeric heath forest with a lot of burned wood 3 Sep 2021, leg. & det. JP 5465 (H).

Tubulicrinis hirtellus (Bourdot & Galzin) J.Eriksss.

Fig. 62

DISTRIBUTION: New to 4b and 4c. 5th–8th records in Finland; previous records: Lammi (2a), Kuhmo (3b), Rovaniemi (3c), and Tervola (3c) (Kotiranta et al. 2009, Kunttu et al. 2016, 2018).
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Puolanka, Pihlajavaara, 7187694 N, 539482 E, on a decorticated, charred stump of *Pinus sylvestris* (diam. 11 cm, decay stage 3) in a pine-dominated mesic heath forest, 10 Aug 2023, leg. & det. MK 25/10.8.2023 (OULU); Suomussalmi, Koisti, 71743 N, 5998 E, on a fallen trunk of *Pinus sylvestris* (diam. 25 cm, decay stage 4, kelo tree) in old-growth pine-dominated sub-xeric heath forest with a substantial amount of dead wood, 26 Aug 2023, leg. & det. TH 20230010 (OULU); Lapponia sompiensis, Savukoski, Maltio Strict Nature Reserve, 7477533 N, 564460 E, on a broken kelo trunk of *Pinus sylvestris* (diam 25 cm, decay stage 4) in an old-growth xeric heath forest with a lot of burned wood, 31 Aug 2021, leg. & det. JP 4577 (H); Lapponia inarensis, Inari, Lemmenjoki National Park, 7619947 N, 457192 E, on a broken kelo trunk of *Pinus sylvestris* (diam. 5 cm, decay stage 4) in an old sub-xeric heath forest, 25 Aug 2021, leg. & det. JP 4533 (H).

Tubulicrinis inornatus (H.S. Jacks. & D.P. Rogers) Donk

DISTRIBUTION: 8th record in Finland; previous records: Lammi, (2a), Padasjoki (2a), Pieksämäki (2b), Saarijärvi (3a), Kuhmo (3b, two sites), and Rovaniemi (3c) (Kotiranta et al. 2009, Kunttu et al. 2021, FinBIF 2024c).
SPECIMEN EXAMINED: Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7011396 N, 389602 E, on a whole fallen kelo trunk of *Pinus sylvestris* (diam 37 cm, decay stage 2) in an old-growth sub-xeric heath forest, 13 Sep 2023, leg. & det. JP 5353 (OULU).

Fig. 63. *Tubulicrinopsis granulosa* in Paltamo (TH20220988). Photo: Teppo Helo

Fig. 64. *Xenasma pulverulentum* in Suomussalmi (TH20230055_2). Photo: Teppo Helo

Tubulicrinopsis ellipsospora Kotir., Hjortst. & Kulju

DISTRIBUTION: 4th record in Finland; previous records: Oulu (3a), Vaala (3a), and Lieksa (3b) (Kotiranta et al. 2009).
SPECIMEN EXAMINED: Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7010140 N, 386864 E, on a kelo snag of *Pinus sylvestris* (diam 34 cm, decay stage 2) in an old-growth sub-xeric heath forest, 11 Sep 2023, leg. & det. JP 5353, conf. MK (OULU).

Tubulicrinopsis granulosa Hjorts., Miettinen & Kotir. **Fig. 63**

DISTRIBUTION: New to 3b. 2nd record in Finland; previous record: Kittilä (4b) (Kunttu et al. 2012).
NOTES: Data Deficient (DD).
SPECIMEN EXAMINED: Ostrobottnia kajanensis, Paltamo, Ellukka, 71413 N, 5329 E, on a fallen trunk of *Picea abies* (diam. 25 cm, decay stage 4) with *Cerinomyces borealis* in a spruce-dominated herb-rich forest, 7 Oct 2022, leg. TH 20220988, det. MK, conf. TH (OULU).

Tulasnella permacra P. Roberts

DISTRIBUTION: 9th record in Finland; previous records: Helsinki (1b), Tammisaari (1b), Kuhmo (3b, two sites), Puolanka (3b), and Sotkamo (3b, three sites) (Kotiranta et al. 2009, Kunttu et al. 2018, 2019, 2020, 2021).
SPECIMEN EXAMINED: Regio aboënsis, Kemiönsaari, Kulla Nature Reserve, 6666404 N, 250661 E, on a cut stump of *Pinus sylvestris* (diam. 17 cm, length 0,1 m, decay stage 4) with *Botryobasidium subcoronatum* in a sub-xeric heath forest, 19 Sep 2021, leg. PK 10139, det. MK (OULU).

Uncobasidium luteolum Hjortstam & Ryvarden

DISTRIBUTION: New to 2a. 2nd record in Finland; previous record: Luhanka (2b) (FinBIF 2024c).
SPECIMEN EXAMINED: Nylandia, Sipoo, Box S, Spjutsundintie 283, Vårberga, lower area, 6685100 N, 412567 E, on a dead trunk of *Populus tremula* in a mesic deciduous forest, 1 Jan 2018, leg. HV 26197, det. MK (H).

Xenasma pruinosum (Pat.) Donk

DISTRIBUTION: New to 1b. 5th–8th records in Finland; previous records: Kuhmoinen (2a), Jyväskylä (2b), Luhanka (2b), and Kajaani (3b) (Kunttu et al. 2018, 2021, FinBIF 2024c).
SPECIMENS EXAMINED: Regio aboënsis, Raasepori, Malmskogen Nature Reserve, 6668777 N, 296381 E, on a broken branch of *Corylus avellana* (diam. 7 cm, decay stage 4) in a herb-rich forest, 24 Sep 2022, leg. & det. JP 5021 (H); Ostrobottnia kajanensis, Puolanka, Pihlajavaara, 7187504 N, 539297 E, on a corticated fallen trunk of *Salix caprea* (diam. 15 cm, decay stage 1) in a spruce-dominated herb-rich forest, 7 Sep 2023, leg. & det. MK 8/7.9.2023 (OULU); Puolanka, Iso Jänisjärvi, 7206892 N, 545121 E, on a corticated fallen trunk of *Salix caprea* (diam. 7 cm, decay stage 1) in a spruce-dominated herb-rich forest, 11 Aug 2023, leg. & det. MK 30/11.8.2023 (OULU); Paltamo, Melalahti, 71441 N, 5326 E, on a fallen trunk of *Salix caprea* (diam. 10 cm, decay stage 3) in calcareous mesic herb-rich forest, 2 Oct 2021, leg. & det. TH 20210554 (OULU); Ristijärvi, Saukkovaara, 71463 N, 5576 E, on a fallen trunk of *Salix caprea* (diam. 15 cm, decay stage 1) in mixed herb-rich heath forest, 22 Oct 2022, leg. & det. TH 20221170 (OULU).

Xenasma pulverulentum (Litsch.) Donk **Fig. 64**

DISTRIBUTION: New to 3b. 4th record in Finland; previous records: Lohja (1b), Raasepori (1b), and Toivakka (2b) (Purhonen et al. 2020, FinBIF 2024c).
NOTES: Data Deficient (DD).
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Suomussalmi, Koisti, 71743 N, 5998 E, on a fallen trunk of *Betula* sp. (diam. 18 cm, decay stage 3) in old-growth spruce-dominated mesic heath forest with a substantial amount of dead wood, 26 Aug 2023, leg. & det. TH 20230027 (OULU); on the same date and in the same forest area: on a fallen trunk of *Betula* sp. (diam. 30 cm, decay stage 2) leg. & det. TH 20230047 (OULU); on a fallen trunk of *Populus tremula* (diam. 25 cm, decay stage 4), leg. & det. TH 20230048 (OULU); on a fallen trunk of *P. tremula*

Fig. 65. *Xenasmatella subflavidogrisea* in Suomussalmi (TH20230005). Photo: Teppo Helo

Fig. 66. *Xylodon erastii* in Kajaani (TH20211089). Photo: Teppo Helo

Fig. 67. *Xylodon pruni* in Raasepori (JP5147). Photo: Jorma Pennanen

(diam. 25 cm, decay stage 3), leg. & det. TH 20230055 (OULU).

Xenasma rimicola (P. Karst.) Donk

DISTRIBUTION: New to 1b. 6th record in Finland; previous records: Kuhmoinen (2a), Jyväskylä (2b), Luhanka (2b), Kajaani (3b), and Sotkamo (3b) (Kotiranta et al. 2009, Kunttu et al. 2019, 2020).
SPECIMEN EXAMINED: Nylandia, Kirkkonummi, Kakarsberget, 6680737 N, 361194 E, on a branch of *Populus tremula* (diam. 10 cm, decay stage 2) in a *Picea abies*-dominated mesic heath forest, 13 Oct 2023, leg. & det. JP 5021 (OULU).

Xenasmatella borealis (K.H. Larss. & Hjortstam) Duhem

DISTRIBUTION: New to 3a.
SPECIMEN EXAMINED: Tavastia borealis, Kivijärvi, Salamanperä Strict Nature Reserve, 7011391 N, 387614 E, on a dead standing kelo tree of *Pinus sylvestris* (diam. 25 cm, decay stage 1) in an old-growth sub-xeric heath forest, 14 Sep 2023, leg. & det. JP 5370, conf. MK (OULU).

Xenasmatella subflavidogrisea (Litsch.) Oberw. (Phlebiella s. (Litsch.) Oberw.) **Fig. 65**

DISTRIBUTION: New to 3b.
SPECIMENS EXAMINED: Ostrobottnia kajanensis, Suomussalmi, Koisti, 71743 N, 5998 E, on a fallen trunk of *Pinus sylvestris* (diam. 20 cm, decay stage 4, kelo tree) and on a fallen trunk of *Pinus* sylvestris (diam. 20 cm, decay stage 4, kelo tree) in old-growth pine-dominated sub-xeric heath forest with a substantial amount of dead wood, 26 Aug 2023, leg. & det. TH 20230005*, 20230015* (OULU).

Xylodon erastii (Saaren. & Kotir.) Tura, Zmitr., Wasser & Spirin **Fig. 66**

DISTRIBUTION: New to 3b.

SPECIMENS EXAMINED: Ostrobottnia kajanensis, Kajaani, Suvantola, 71240 N, 5338 E, on a fallen branch of an unidentified shrub (diam. 1 cm, decay stage 2) in a riparian thicket forest with a large amount of dead wood, 6 Nov 2021, leg. & det. TH 20211095, conf. MK (OULU); on a fallen branch of an unidentified shrub (diam. 1 cm, decay stage 3) in a riparian thicket forest with a large amount of dead wood, 6 Nov 2021, leg. & det. TH 20211089 (OULU).

Xylodon pruni (Lasch) Hjortstam & Ryvarden

Fig. 67

DISTRIBUTION: 5th record in Finland; previous records: Finström (1a), Lohja (1b), Parainen (1b), and Raasepori (1b) (Kotiranta et al 2009, Kunttu et al. 2014).

SPECIMEN EXAMINED: Regio aboënsis, Raasepori, Malmskogen Nature Reserve, 6668804 N, 296395 E, on a broken trunk of an unidentified deciduous tree (diam. 10 cm, decay stage 3) in a herb-rich forest, 30 Oct 2022, leg. & det. JP 5147 (H).

Discussion

Species new to Finland

Although *Amylocorticium laceratum* is relatively inconspicuous, it is a characteristic species microscopically. In literature, the species is reported from Sweden (holotype from Stockholm), Norway, and Spain (Hjortstam & Ryvarden 1979). Both GBIF (2024) and FinBIF (2024) list additional collections from Denmark, France, Austria, Switzerland, Georgia, Russia, and North-East China. *A. laceratum* is red-listed as vulnerable (VU) in Sweden and Norway. According to Swedish Artfakta the species has been found in areas with high amounts of dead wood (SLU 2024). Our single collection is from the Älänne-Tiilikkajoki Natura 2000-site, an esker area, which has a particularly intensive logging history starting from the late 19th century: the Tiilikkajoki river was a rafting route for pine timber until the 1950s. In 2007 the management plan for the Älänne Natura 2000-site estimated the mean dead wood volume in the area to be impressively sanitary, i.e., 0,35 m^3/ha (Haapalehto 2007). Consequently, although the pine dead wood continuity in the area is not particularly good, the collection site contains significant volumes of pine dead wood, originating from a prescribed burn and active restoration efforts around 2010. It has yet to be determined whether the charred kelo-like piece of substrate is accidental or preferred by the species.

The discovery of *Artomyces piperatus* represents its first recorded occurrence in Europe. It is a globally rare species, which has been previously known only from the USA (Alaska, California, Idaho, New Mexico, Oregon, Pennsylvania, Washington) and Canada (British Colombia). There are 34 preserved North American specimens in the GBIF database (GBIF Secretariat 2024). Most collections are from the Pacific Northwest region west of the Rocky Mountains. The GBIF database also reveals multiple records (44) of *A. piperatus* from New Zealand and Australia. However, according to Lickey et al. (2003) and based on genetic studies, these are most likely represented by two other closely related taxa i.e., *Artomyces novae-zelandiae* Lickey or *A. austropiperatus* Lickey. Since only minor macro- and microscopic differences exist between these three taxons, species-level identification always needs genetic studies. Only *A. piperatus* and another European species, *A. microspores,* have been found on conifers (Fraiture et al. 2008), whereas all other species in the genus seem to prefer hardwood.

The Finnish record of *A. piperatus* was found on an advanced decayed *Pinus sylvestris* kelo log. The habitat in Maltio Strict Nature Reserve was unique and rare: xeric old-growth pine heath forest with abundant burn marks on both living trees and kelo trunks.

Basidiodendron glaucum has a wide boreal distribution covering Sweden, Norway, France, Northwest Russia, and the Russian Far East. It primarily occurs in old-growth coniferous forests with abundant wood remnants and decayed coniferous substrates (Spirin et al. 2021a). This also applied to the Finnish records, which were recorded on a strongly decayed stump and a fallen, large-diameter trunk of *Picea abies* in a very old spruce-dominated old-growth mesic heath forest with a substantial amount of dead wood.

Basidiodendron globisporum has been reported in Sweden, Switzerland, Slovenia, Russia, and

the USA (Spirin et al. 2020, GBIF Secretariat 2024). The species is distributed in temperate-boreal coniferous forests. Although predominantly found in old-growth coniferous forests with abundant dead wood, basidiomata have primarily been collected from decayed *Picea abies*. However, there is also a record on *Tsuga* sp. (Spirin et al. 2020, 2021a). The Finnish record was made on a fallen branch of *Picea abies* in a spruce-dominated herb-rich forest.

The records of *Clavariadelphus mucronatus* are the first records from Europe. The species has been documented in the western regions of North America (Wells & Kempton 1968). It seems to prefer moist herb-rich *Picea abies* forest, and all known sites are of old-growth forests from Northern Finland. More information about the records made before 2023 can be found in Finnish (Kekki 2023).

Clavulina perplexa was described from Italy, and after that, it has been reported worldwide based on sequence data (Campo et al. 2023). In Italy, basidiocarps grew near *Helianthemum*, while in Finland, it occurred on ground on coastal meadows close to the waterline.

Clavulina reae is widely distributed in the northern hemisphere based on the Unite sequence data. *C. reae* was formerly classified as *C. cinerea* var. gracilis (Olariaga & Salcedo 2012). Although there is also unpublished sequence data of two collections from Finland, that material has not yet been examined. In Finland, basidiocarps grew on the ground in a moist, herb-rich mixed forest and a grazed meadow with *Picea abies* and other trees.

Dichostereum effuscatum is distributed worldwide including Europe, North and South America, Africa, and Tropical and Temperate Asia (Martini 2024). Most European records are from France, Germany, and the Netherlands. Elsewhere in Europe, there are only scattered observations. The new Finnish record might be the northernmost so far. The closest other recorded observations are from Sweden and Estonia (GBIF Secretariat 2024). *D. effuscatum* is mainly found in wooded wet swamps. *Alnus glutinosa* or *A. incana* dead wood is the most common substrate in those habitats. However, there are also observations from other hardwood substrates like *Betula*, *Carpinus*, *Fagus*, *Quercus*, *Fraxinus*, *Populus*, *Salix*, *Tilia* and *Ulmus* (Martini 2024). In Finland, the species was recorded on a water-saturated, decorticated fallen trunk of *Alnus glutinosa* in a wet wooded lakeshore swamp. The basidiocarp grew on a trunk with *Bulbillomyces farinosus (Aegerita* state*)*, which favours the same substrates and humid habitats (Larsson & Ryvarden 2021). *D. effuscatum* is an uncommon species in Europe (Bernicchia & Gorjón 2010). The submersible wetland habitats where the species is most likely to be found are usually difficult to access, which may partly explain the low number of records.

Elaphocephala iocularis has been collected in the Czech Republic, France, Germany, Netherlands, the United Kingdom, and the USA (Larsson & Ryvarden 2021, GBIF Secretariat 2024). It occurs mainly on strongly rotted deciduous wood (Larsson & Ryvarden 2021). In Finland, the species was found on a highly decayed *Populus tremula* trunk in an old spruce-dominated mesic heath forest.

Gloeocystidiellum kenyense was described as being from Africa (Hjortstam 1987). However, the species has a wide distribution, it is known in Europe, North America, Eastern Asia (Taiwan), and the Indian subcontinent (India) (Wu 1996, Hjortstam & Ryvarden 2007, Renadive et al. 2011, Telleria et al. 2012, GBIF Secretariat 2024). Its presence in Europe is based on morphological comparisons with type material. The distribution in Europe seems to be mainly in Northern temperate areas. However, since the species is difficult to separate from *Gloeocystidiellum clavuligerum,* it is challenging to interpret the published records without revising all of the material (Larsson & Ryvarden 2021).

The species prefers angiosperms as its substrate (Larsson & Ryvarden 2021). In the Azores Archipelago the collections have been made from *Pittosporum undulatum*, in Madeira Island from *Ocotea foetens* (Telleria et al. 2012), and in India it has been collected from *Ficus benjamina* (Renadive et al. 2011). In Finland, specimens were collected from both deciduous (*Populus tremula*) and coniferous (*Picea abies*) trees. The substrata varied from early decay stage to intermediately decayed lying trunks.

Helicogloea pellucida has been found in Norway, Russia, Ukraine, Canada, and the USA. Its typical substrata have been the fallen logs of deciduous trees (Spirin et al. 2018a). In the current work, this is the first time the species has been found growing as an intrahymenial fungus in *Botryobasidium isabellinum*. In contrast, they previously grew on a decorticated fallen trunk of *Betula* in a spruce-dominated

herb-rich forest.

Hirticlavula elegans has been recorded in Denmark, Norway, and the United Kingdom (Petersen et al. 2014, Læssøe & Petersen 2019). It has been found on deciduous trees: *Quercus*, *Salix*, *Corylus* (Petersen et al. 2014), while a Finnish specimen was recorded on a fallen branch of *Prunus padus* in a spruce-dominated herb-rich forest.

Lindtneria leucobryophila has been found in several European countries (Sweden, Estonia, Denmark, Germany, Belgium, the Czech Republic, Croatia, the United Kingdom, Spain, Italy, and Switzerland) and the Caucasus. It grows on various organic substrates such as mosses, rotten herbaceous plants, leaves, bark and the rotten wood of broadleaved and coniferous trees. It is also found in greenhouses (Fraiture 2011). The Finnish record was made on bryophytes and stones on the edge of a rock.

Luellia furcata has been collected in Sweden Denmark, Germany, Norway, Sweden, and Switzerland (Bernicchia & Gorjón 2010, Eriksson & Ryvarden 1976, GBIF 2024). It seems to occur on the decayed wood of coniferous trees: *Abies* sp., *Picea abies* (Eriksson & Ryvarden 1976, GBIF Secretariat 2024). Likewise, the Finnish record was made on a small, but advanced decayed fallen trunk of *Picea abies* in a spruce-dominated herb-rich forest.

Myxarium crystallinum has been reported only in Denmark, Norway, and the United Kingdom. The species was collected from the advanced decayed wood of deciduous trees (preferably *Ulmus* sp.) (Spirin 2019b). Similarly, the record in Finland was derived from a fallen trunk of *Prunus padus* in a young deciduous thicket forest.

Myxarium fugacissimum has been reported in Estonia, France, Norway, European Russia, and the Russian Far East. Its known substrata include strongly decayed wood of deciduous trees, such as *Alnus incana*, *Fraxinus excelsior*, *Ulmus glabra*, *Fagus sylvatica*, *Tilia cordata* and *Quercus* sp. (Spirin 2019b). By contrast, the Finnish records derived from *Picea abies*, which differs from the earlier notes.

Myxarium grilletii has a global distribution and has been listed in France, Germany, Norway, Armenia, Canada (Alberta), and the USA (Massachusetts). According to Spirin et al. (2019b) the substrata have been strongly rotted wood of deciduous trees in moist places including the tree species *Ulmus glabra* and *Populus tremula* in Europe, *Juglans regia* in the Caucasus and *Populus alba* and *Malus* sp. in North America. The Finnish specimen was collected from a decayed fallen branch of a deciduous tree in a spruce-dominated mesic heath forest.

Myxarium minutissimum has been reported in Norway, Denmark, Austria, France, and Russia (Spirin et al. 2019, Danish Mycological Society 2024). Spirin et al. (2019) report that this species typically inhabits the strongly decayed wood of deciduous trees, such as *Alnus glutinosa*, *Quercus petraea*, *Q. robur*, *Populus* sp., *Acer platanoides*, *Ulmus glabra*, and *Salix caprea*. The substrata in Finland included fallen branches from *Prunus padus* and a deciduous tree. These substrata both occurred in spruce-dominated, herb-rich forests.

Paullicorticium globosum has been found in France, Germany, Sweden, and Switzerland (Bernicchia & Gorjon 2010, GBIF Secretariat 2024). The substrata were the decayed wood of deciduous and coniferous trees: *Fagus* sp., *Picea abies*, and *Salix atrocinerea* (Boidin & Gilles 1994, Gruhn & Trichies 2021, GBIF Secretariat 2024). Likewise, the Finnish substratum was a decayed fallen trunk of *Picea abies* in an old-growth spruce-dominated mesic heath forest.

Polyozellus flavovirens is a globally distributed species: the species has been recorded in multiple countries, including Sweden, Norway, Denmark, and several others across Europe, Asia, and North America (GBIF Secretariat 2024, Martini 2024). This species has not been found earlier in Finland, as stated in the paper of Svantesson et al. (2019). Elsewhere, the substrata have been the fallen logs of conifers and deciduous trees, while in Finland, the substrata were the advanced decayed fallen trunks of *Picea abies* in spruce-dominated, herb-rich and mesic heath forests.

Protoacia delicata belongs to a new genus, which contains only this one species. Its previously known distribution covers Sweden, Norway, European Russia, and the Russian Far East (Spirin et al. 2019b). The substrata of collections have been the strongly decayed wood of conifers, mostly *Picea abies*. Also, all new Finnish samples were collected from conifers: one from *Picea abies*, and the other two from the dead wood of *Pinus sylvestris*. This species has a gelatinous, semitranslucent, and dis-

tinctly hydnoid basidiocarp. By comparison, the similar-looking *Protodontia subgelatinosa* (P. Karst.) Pilát grows mainly on hardwood.

Ramariopsis hirtipes has been found in Italy, Denmark, Norway and the United Kingdom based on sequence data from Unite and Bold. There is also unpublished sequence data of two collections from Southern Finland, although that material has not been examined. In Northern Finland *R. hirtipes* grew in a herb-rich mixed forest and calcareous roadside grass.

Repetobasidium conicum has a wide distribution in the northern hemisphere, where it has been collected in Estonia, Norway, Sweden, Denmark, Austria, France, Germany, Russia, Mexico, Canada, and the USA (Eriksson et al. 1981, Bernicchia & Gorjon 2010, GBIF Secretariat 2024). The hosts mentioned by Eriksson et al. (1981) and Ginns & Lefebvre (1993) were decayed conifers, such as *Abies concolor, Picea abies*, and *Pseudotsuga menziesii*. In contrast, the host in Finland was an advanced decayed fallen kelo trunk of *Pinus sylvestris* in an old-growth xeric heath forest.

Serendipita vermifera has extensive global distribution with findings from throughout Europe (12 countries), Morocco, South Africa, Thailand, the Caribbean Archipelago (Virgin Islands), Russia, China, Australia, the USA, Canada, and Equator (Hauerslev 1976, Dämon 2001, Roberts 2008, Durán-López et al. 2019, GBIF Secretariat 2024). Part of these records include soil sample sequences.

The substrata of *S. vermifera* have been both coniferous (*Picea abies* and *Pinus sylvestris*) and deciduous trees (*Fagus* sp. and) *Prunu1s spinosa*), and also intrahymenial in other corticioid fungi, like *Tomentella* sp., *Sistotrema octosporum*, *Thanatephorus fusisporus*, and *Heterochaetella dubia* (Roberts 1999, Trichies 2002, Hardtke et al. 2015, Hardtke 2021). Moreover, it has been noted that the species occurs mycorrhizally with orchids (Warcup & Talbot 1967, Durán-López et al. 2019). The Finnish specimen was found inside *Tomentella cinerascens* s. lat. on a fallen branch of *Populus tremula* in an old spruce-dominated mesic heath forest.

Thujacorticium zurhausenii is distributed in the northern hemisphere with records in Sweden, Norway, Austria, Switzerland, the USA, and Canada (Ginns 1988, Dämon 2000, Nakasone 2008, GBIF Secretariat 2024). Norway has the most observations; nine sites are known (Brandrud 2021). *T. zurhausenii* is red-listed in Norway, as Endangered (EN). It has been collected from charred *Pinus sylvestris* in a sandy pine forest and on large diameter and advanced decayed *Pinus sylvestris* logs found in old-growth forest settings in Fennoscandinavia. By contrast, it has been found in Central Europe on *Taxus baccata*, *Picea abies*, *Picea* sp, *Larix* sp. and *Fagus* sp., and in North America from dead, standing *Juniperus virginiana* and *Thuja plicata*. The records in Finland were also derived from *Pinus sylvestris*: on large-diameter fallen and partially standing kelo trunks, as well in the roots of uprooted kelo trees. It appears to be a boreal-montane species with a preference for large diameter conifer dead wood. Our specimens share the distinctive snowflake-like crystal formations, which massively expand in heated lactic acid, as described in Ginns (1988).

Tretomyces lutescens has a global distribution and has been listed in Sweden, Norway, Denmark, Estonia, France, Spain, Georgia, Russia, India, and Brazil (Kotiranta et al. 2011, GBIF Secretariat 2024). Several of these observations are eDNA-sequences made in soil samples (GBIF Secretariat 2024). European habitats include old-growth coniferous forests, deciduous forests with large trees, and substrata of decayed tree trunks. These include hard, decorticated *Picea abies* trunks, decayed *Pinus* trunks, decayed *Betula* trunks, mosses, and litter (Kotiranta et al. 2011, GBIF Secretariat 2024). In Finland, the species grew on a dead standing trunk of *Juniperus communis* in a heath forest.

Significant extensions of the known distribution

Some of the new records were made far from their earlier finds. The new record of *Cerinomyces aeneus* in Salla extended its known range approximately by 720 km to the north, since the nearest previous record was made in Sysmä. *Membranomyces spurius* was found in Paltamo, which is situated 480 km north of the nearest previously known location in Vantaa. Furthermore, it was also found 590 km south of its second nearest record in Utsjoki. The new record of *Lindtneria chordulata* in Oulu is 430 km north of the nearest previous record in Lammi. *Tubulicrinopsis granulosa* was found in Paltamo, which is situated 390 km south of the first Finnish

record. The *Athelicium stridii* collection from Lapinlahti is located 380 km north of its first recorded site in Tuusula. We assume that the increasing survey activity in earlier rarely inventoried regions can explain these extensions of the species' known distribution.

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