

Forty pyrenomycetous fungi belonging to Class Sordariomycetes new to Norway

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Norsk tittel: 40 kjernesopper nye for Norge

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KEYWORDS

Ascomycetes, wood-living fungi, bark-living fungi, pyrenomycetes

NØKKELOORD

Sekksporesopp, vedboende sopp, barkboende sopp, pyrenomyceter

SAMMENDRAG

40 arter av kjernesopper (pyrenomyceter) tilhørende klassen Sordariomycetes presenteres som nye for Norge. Artene ble samlet i edellauvskog i Sør-Norge som del av et prosjekt finansiert av den norske Artsdatabanken. Artene er hovedsakelig vedboende, men noen

arter som vokser på bark, lav, moser, møkk og sopp er også inkludert.

ABSTRACT

Forty species of ascomycetes belonging to class Sordariomycetes are presented as new to Norway. The species were collected in temperate deciduous forest in South Norway as part of a project financed by the Norwegian Biodiversity Information Centre. The species are mainly wood-inhabiting, but a few species on bark, bryophytes, fungi, lichens or dung are also included.

INTRODUCTION

Ascomycetes come in a bewildering array of shapes and forms, and in exceedingly great numbers. However, despite their outstanding importance for biodiversity, especially the non-lichenized members remain little studied and poorly known. This is certainly true for pyrenomycetous fungi, i.e. fungi with perithecia, or with ascomata resembling perithecia. Before the era of modern and molecular systematics, such fungi were collectively

referred to as Pyrenomycetes, but belong to several only distantly related clades or lineages. One of the largest of these groups is class Sordariomycetes, which encompasses for example the well-known genera *Sordaria*, *Trichoderma* and *Xylaria*. Sordariomycetes are found on many different substrates of which dead wood of deciduous trees is one of the most species rich. Few mycologists study these fungi in Norway, but an active research group exists at the arctic university in Tromsø. In a project financed by the Norwegian Biodiversity Information Centre (Artsdatabanken), pyrenomycetous fungi were surveyed in the temperate deciduous forests of southern and western Norway. In this paper we concentrate on species belonging to class Sordariomycetes and report 40 species as new to Norway. In addition, finds of five rarely collected species are reported. The reported species are predominantly associated with dead wood or bark, but some were collected from bryophytes, fungal fruit-bodies, lichen thalli, or droppings. Short comments on the distribution, ecology and taxonomy of the species are provided.

MATERIALS AND METHODS

Most of the reported species were collected in the field by us, but a few of the species were instead encountered during a revision of the mycological collections in Norwegian herbaria. All collections were made in temperate deciduous forests in southern and western Norway, north to Steinkjer in Nord-Trøndelag. The species were determined by studying the sexual morph (teleomorph) under the microscope unless otherwise stated. Experts in various groups were consulted for determination or verification of several species, and an international expert workshop was arranged in Arendal in October 2014. Another workshop for amateur mycologists from Norway was arranged in Tønsberg in October 2013. A species was considered as new to Norway

unless it appeared in Aarnæs (2002) or in either The Norwegian Mycological Database (NSD 2015) or Norwegian Biodiversity Information Centre (Artsdatabanken 2015). Only selected finds are presented and more material may exist. Positions are given as latitude/longitude with decimal degrees. All collections will subsequently be placed in Herb. O. Collectors and identifiers are: BN=Björn Nordén, CL=Cristian Lechat, EJ=Edvin Johannesen, HG=Helge Gundersen, HV=Hermann Voglmayr, JBJ=John Bjarne Jordal, JF=Jacques Fournier, JHP=Jens H. Petersen, JS=Jogeir Stokland, PC=Paul Cannon, TL=Thomas Læssøe, WJ=Walter Jaklitsch. Data on distribution in Sweden and Denmark are cited from Eriksson (2014) and Dansk Svampeatlas (2015), respectively if not otherwise stated.

RESULTS

Albertiniella polyporicola (Jacz.) Malloch & Cain. Fig. 1.

This species is relatively common in Sweden and has 21 records in Denmark.

Material: Oslo, 200 m SE of Skullerudstua, near Østmarka (Ljanselva), 59.8626 / 10.7880,

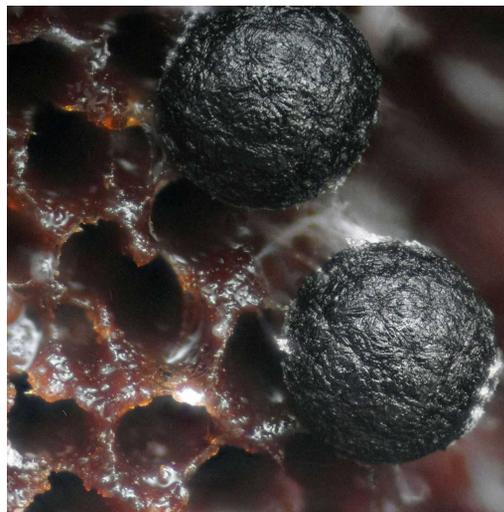


Figure 1. *Albertiniella polyporicola* growing on the hymenium of *Ganoderma applanatum*. Photo: H. Gundersen.

on dead *Ganoderma applanatum* basidiome, May 2, 2013, leg. EJ, HG, det. BN.

***Amphiporthe hranicensis* (Petr.) Petr.**

An easily recognizable species that may be common on its host in south Norway. It was found in Skåne in Sweden and has 11 records in Denmark.

Material: Oslo, Vålerenga church, 59.9068 / 10.7880, on attached corticated, *Tilia* branch 1 cm thick, May 29, 2013, leg. & det. TL.

***Amphiporthe leiphaemia* (Fr.: Fr.) Butin**

The species is known to be a common endophyte in *Quercus* twigs (Ragazzi et al. 2003). In Sweden it is known from Skåne to Uppland, and it has been found 5 times in Denmark. Material: Vestfold, Tønsberg, Søndre Berg, 59.3005 / 10.4035, on cut corticated *Quercus* branch, Aug. 15, 2012, leg. & det. BN. A previous find was reported by Aarnæs (2002).

***Amphisphaeria bufonia* (Berk. & Broome) Ces. & De Not.** Fig. 2, 3.

This species grows according to the literature on *Quercus*, while the type species of the genus, *Amphisphaeria umbrina* (Fr.) De Not. occurs on *Ulmus* (Eriksson 2014). Although our material was found on *Ulmus* it fits better with *A. bufonia* as described by Barr (1994) than with the description of *A. umbrina* in

Kang et al. (1999). The spores are verrucose, 1(-3)-septate and about 21 µm long. Both species are known from Sweden, but not from Denmark.

Material: Møre og Romsdal, Nesset, Eikesdalen, Stakkengfonna Nature Reserve, 62.4508 / 8.2772, on bark of living *Ulmus* in deciduous forest, May 14, 2012, leg. BN, JBJ, det. BN, TL.



Fig. 3. One of the *Ulmus* trees on which *Amphisphaeria bufonia* was found (Møre og Romsdal: Nesset: Eikesdalen). Photo: J. B. Jordal.

***Bryocentria metzgeriae* (Ade & Höhn.) Döbbeler.** Fig. 4.

This species is most probably overlooked due to the very small ascomata, but it can be spotted by looking for dead, white patches on the common liverwort *Metzgeria furcata*. It is



Figure 2. *Amphisphaeria bufonia* on *Ulmus* bark. Photo: J. B. Jordal.



Figure 4. *Bryocentria metzgeriae* on the thallus of *Metzgeria furcata*. Photo: C. Reisborg.

known from Skåne and Uppland in Sweden, but not from Denmark. A related species, *B. hypothallina* is published separately from Norway as new to science (Nordén et al. 2015). Material: Vestfold, Tønsberg, Søndre Berg, 59.3005 / 10.4035, on *Metzgeria furcata* on bark of *Quercus*, Aug. 15, 2012, leg. BN, det. BN, TL.

***Camarops lutea* (Alb. & Schwein.) Shear**

In Sweden it is known from Skåne to Uppland, and it is rather common in Denmark with a wide host range. Based on its fairly conspicuous stromata it is not expected to be overlooked and may be uncommon in Norway. Material: Vestfold, Tønsberg, Gullkronene Nature Reserve, Lille Gullkrona, 59.2853 / 10.3826, on fallen *Fagus* trunk, Oct. 25, 2013, leg. & det. TL.

***Camarops pugillus* (Schwein.) Shear**

The species appears to be rare in the Nordic countries and usually occurs on deciduous wood, e.g. *Corylus* and *Alnus*, and this appears to be the first published report from coniferous wood *Camarops pugillus* is sometimes difficult to separate from *C. lutea* as intermediate specimens occur. This rare species has been described and illustrated in detail from Sweden and Denmark (Lundqvist 1987, Læsøe and Hansson 2008).

Material: Telemark, Porsgrunn, Bakke, 59.17 / 9.84, *Picea abies* log in temperate deciduous forest, Sept. 4, 1996, leg. JS, det. BN.

***Ceratospaeria lampadophora* (Berk. & Broome) Niessl**

The species is probably not rare on dead wood of deciduous trees but is easily overlooked and clearly less common than species of *Lentomitella* that macroscopically are very similar. It has been collected in Skåne and Västerbotten in Sweden but can probably be found all over the country. In Denmark it was found 3 times.

Material: Hordaland, Etne, Bjelland, 59.8218 / 6.2042, on *Fraxinus* wood, May 10, 2013, leg. & det. BN, TL.

***Ceratospaeria rhenana* (Auersw.) Berl. & Voglino (s. Munk 1957, Cannon 2015)**

The species is probably not rare on dead wood of deciduous trees but is easily overlooked. It is found in Sweden from Skåne to Uppland and was found 4 times in Denmark. It is in need of both taxonomic and phylogenetic assessment.

Material: Akershus, Nesodden, Røer, 59.81 / 10.68, on *Quercus* wood, decorticated attached branch, Feb. 2, 2013, leg. & det. TL.

***Ceriospora ribis* Henn. & Plötn.**

The species is new to Scandinavia.

Material: Vestfold, Horten, Fjugstad, 59.3611 / 10.4637, on wood of *Ribes nigrum* in deciduous forest, Oct. 24, 2013, leg. & det. BN.

***Chaetosphaeria tortuosa* Réblová, Seifert & G.P. White**

This species is new to Scandinavia.

Material: Vest-Agder, Kristiansand, Nedre Timenes, on dead fallen *Tilia cordata* twig, Oct. 5, 2014, 58.1649 / 8.1096, leg. & det. PC.

***Diatrype decorticata* (Pers.) Rappaz. Fig. 5.**

This species was reported from *Fagus sylvatica* and *Corylus avellana* in Sweden (Eriksson 2014). According to our observations (Nordén unpublished) it probably occurs regularly on *Quercus*. It is found in south Sweden and is reported as common in Denmark.

Material: Akershus, Nesodden, Røer, 59.81 / 10.68, on *Quercus* branch, Feb. 2, 2013, leg. TL, det. BN. A previous find was reported by Aarnæs (2002).



Figure 5. *Diatrype decorticata* on a *Fagus* branch. Photo: C. Reisborg.

***Diatrype stigmaoides* Kauffman.** Fig. 6.

This species was described from North-America and is distinguished by e.g. a prominently undulating stromatal surface, a prominent white endostroma, and preference for *Quercus*. It was previously collected in continental Europe but is new to Scandinavia (Fournier unpublished).

Material: Aust-Agder, Froland, Ytre Lauvrak, 58.5882 / 8.3255, on *Quercus petraea* in temperate deciduous forest, Sept. 26, 2014, leg. BN, det. JF.

***Endothia gyrosa* (Schwein: Fr.) Fr.**

The pinkish conidial mass of the asexual morph occurring in combination with the sexual morph is diagnostic in the field. The species is probably rare and appears to be new to Scandinavia. Apparently it is also rare in the rest of Europe, and it has been found on *Castanea* in Austria by WJ.

Material: Aust-Agder, Froland, Ytre Lauvrak, 58.5882 / 8.3255, on *Quercus petraea* branch, Oct. 10, 2014, leg. & det. WJ.

***Eutypa leioplaca* (Fr.) Cooke**

This species is probably not rare on *Acer* branches in Norway. It is known from the south to the middle parts of Sweden (Eriksson 2014), and was collected twice in Denmark.

Material: Aust-Agder, Arendal, Langevoll, Nedenes, 58.4217 / 8.6990, on *Acer pseudo-*



Figure 6. *Diatrype stigmaoides* on *Quercus*. Photo: B. Nordén.

platanus wood in temperate deciduous forest, Oct. 4, 2014, leg. BN, det. JF.

***Hapalocystis bicaudata* Fuckel**

The Swedish mycologist Lennart Holm made several collections of this species in South Sweden during the nineteen fifties – seventies. It will probably prove to have a wide distribution in Norway as more collectors become aware of the species. It is known from Denmark, but may have declined there due to the Dutch elm disease.

Material: Aust-Agder, Froland, Ytre Lauvrak, 58.5882 / 8.3255, on *Ulmus glabra* branches, Oct. 3, 2014, leg. & det. HV.

***Helminthosphaeria pilifera* Réblová**

This species is probably myco-parasitic but nothing is known about host range. Some seemingly closely related species parasitize various corticioid fungi and *Clavulina coraloides*. It was described from *Fagus* wood in the Czech Republic (Réblová 1999) based on a single collection. It was found once in southern Sweden, but is not known from Denmark.

Material: Aust-Agder, Arendal, Songeskogen, Stea, 58.4942 / 8.8049, on *Populus tremula* wood in temperate deciduous forest, Oct. 4, 2014, leg. & det. JF.

***Hypoxylon fuscoides* J. Fourn., P. Leroy, M. Stadler & Roy Anderson**

This species is very similar in appearance to the very common species *H. fuscum* but differs in the purple reaction in KOH solution. It is not with certainty known from Sweden but most probably occurs there, and it is known from 9 collections in Denmark.

Material: Akershus, Nesodden, Røer, ca. 59.81 / 10.68 on *Alnus glutinosa* branch in deciduous forest, Feb. 2, 2013, leg. & det. TL.

***Immersiella caudata* (Curr.) A.N. Mill. & Huhndorf**

The perithecia are immersed in soft and decayed wood and are not easy to spot. It was found a few times in South Sweden and from 5 collections in Denmark.

Material: Vestfold, Tønsberg, Gullkronene Nature Reserve, Lille Gullkronen, 59.2853 / 10.3826, on *Quercus* wood in deciduous forest, Oct. 25, 2013, leg. & det. TL, JHP.

***Lasiosphaeria sorbina* (Nyl.) P. Karst**

This appears to be a rare species and was found only once in Sweden, and likewise in Denmark (Munk 1957).

Material: Hordaland, Bømlo, Spysøy, Stølsvika South, 59.7253 / 5.3692, on attached, corticated *Tilia* twigs, May 11, 2013, leg. & det. TL. A previous find was reported by

Aarnæs (Mathiassen & Granmo (2012).

***Lentomitella crinigera* (Cooke) Réblová**

Lentomitella crinigera belongs to a group of species with immersed perithecia with long protruding necks that often occur on decayed wood of deciduous trees. This species was found in Skåne in Sweden, and once in Denmark.

Material: Norway, [undatet], Anonymous, Herb. O 184457, as *Endoxyla rostrata*, rev. BN, TL 2013.

***Lopadostoma dryophilum* (G.H. Otth)**

Jaklitsch, J. Fourn. & Voglmayr

This is a rarely collected species. It appears to be confined to *Quercus* spp. (Jaklitsch et al. 2015). It is not known from Sweden and has only two recent Danish records.

Material: Akershus, Nesodden, Røer, ca. 59.81 / 10.68, on corticated *Quercus* branch in association with *Vuilleminia comedens* and *Ascodichaena rugosa*, Apr. 26, 2013, leg. & det. TL.

***Melanconiella flavovirens* (G.H. Otth)**

Voglmayr & Jaklitsch

Voglmayr et al. (2012) gave a monographic account on the genus *Melanconiella* and demonstrated high host specificity of its members, *M. flavovirens* being confined to *Corylus*. Based on our own field experience, we confirm host specificity on *Corylus* and conclude that it may be rare in Scandinavia. It was found in Västergötland and Uppland in Sweden but is not known from Denmark.

Material: Vest-Agder, Kristiansand, Nedre Timenes, 58.1649 / 8.1096, on dead attached *Corylus avellana* twig, Oct. 5, 2014, leg. & det. PC.

***Natantiella ligneola* (Berk. & Broome)**

Réblová

Natantiella ligneola belongs to a group of species with immersed perithecia with long

protruding necks that often occur on decayed wood of deciduous trees. It was found in Uppland in Sweden and was collected on nine occasions in Denmark.

Material: Møre og Romsdal, Tingvoll, ca. 63.00 / 8.00, on deciduous wood, Aug. 17, 1981, as *Endoxyla rostrata*, Herb. O 184465, leg. Geir Hungnes, rev. BN, TL 2013.

***Nectria nigrescens* Cooke**

This species reminds of *Nectria cinnabarina* but has up to 3-septate ascospores and short to long stipitate sporodochia (Hirooka et al. 2012), which darken and eventually become black in the field, and are then easily recognized. It is new to Scandinavia.

Material: Aust-Agder, Froland, Ytre Lauvrak, 58.5882 / 8.3255, on *Rhamnus frangula*, Oct. 3, 2014, leg. & det. WJ.

***Nemania maritima* Y.M. Ju & J.D. Rogers.**

Fig. 7.

Nemania maritima has a wide distribution along warmer coasts where it grows on various kinds of wood (Ju and Rogers 2002), always in contact with sea water. It is not yet known from Sweden, but occurs in Denmark (Læssøe 2003).

Material: Hordaland, Bømlo, Spysøya, Stølsvika South, 59.7262 / 5.3689, deciduous wood on the beach, May 11, 2013, leg. & det. TL.



Figure 7. *Nemania maritima* on submerged wood by the sea shore. Photo: J. H. Petersen.

***Neobarya parasitica* (Fuckel) Lowen**

This is the only fairly well known member of this myco-parasitic genus (Candoussau et al. 2007). It was found from Skåne to Medelpad in Sweden and was found 11 times in Denmark. Material: Østfold, Rygge, Kajalunden nature reserve, 59.3644 / 10.6778, on *Bertia moriformis* ascomata on *Fagus* log in deciduous forest, Apr. 23, 2013, leg. & det. BN, TL. A previous find was reported by Aarnæs (2002).

***Phomatospora helvetica* H. Wegelin**

Many aquatic pyrenomycetous fungi can be expected to occur in Norway, but this remains to be studied. The species appears to be new to Scandinavia.

Material: Aust-Agder, Arendal, Langevoll, Nedenes, 58.4217 / 8.6990, on submerged wood in small stream in temperate deciduous forest, Oct. 4, 2014, leg. & det. JF.

***Podospora setosa* (G. Winter) Niessl**

A species growing on dung of various animals and with several finds in Sweden, but has not been found in Denmark.

Material: Aust-Agder, Froland, Ytre Lauvrak, 58.5882 / 8.3255, on roe deer dung in temperate deciduous forest, Oct. 3, 2014, leg. JF, det. Michel Delpont, after incubation in moist chamber. A previous find was reported by Aarnæs (2002).

***Protocrea pallida* (Ellis & Everh.) Jaklitsch, K. Pöldmaa & Samuels**

This species is easily identified by its host choice and by a fairly bright orange stromatal colour (Læssøe 1994, Jaklitsch 2011). It has for a long time been known as *Hypocrea pallida*, but Jaklitsch et al. (2008) showed that phylogenetically it clearly belongs to *Protocrea*. This species is known from Skåne in Sweden, and is a rather common species in Denmark.

Material: Akershus, Nesodden, Røer, 59.81 / 10.68, on *Tyromyces basidiomata* on *Betula*, Feb. 2, 2013, leg. & det. TL.

***Pseudovalsa umbonata* (Tul. & C. Tul.) Sacc**

Pseudovalsa umbonata is known from six provinces in South Sweden, and may occur in much of the range of *Quercus* also in Norway. It is not known from Denmark.

Material: Aust-Agder, Froland, Ytre Lauvrak, on *Quercus petraea*, 58.5882 / 8.3255, Oct. 3, 2014, leg. & det. HV, WJ.

***Quaternaria dissepta* (Fr.) Tul. & C. Tul.**

This species is not rare in Sweden and known from Skåne to Uppland. It was recorded seven times in Denmark. This *Ulmus* specific species may follow the distribution of *Ulmus* in Norway, but probably face decline due to the Dutch elm disease.

Material: Akershus, Fet, Fetsund, 59.9331 / 11.1618, on dead *Ulmus* branch in deciduous forest, May 5, 2013, leg. & det., TL, BN.

***Rosellinia helvetica* L.E. Petrini, Petrini & S.M. Francis**

Rosellinia helvetica was found in Skåne to Västergötland in Sweden and three times in Denmark.

Material: Vestfold, Larvik, ca. 59.05 / 10.02, Sept. 2 1879, Herb. O 212179 as *Rosellinia thelena*, Rev. TL, BN. Nord-Trøndelag, Steinkjer, Byahalla NR, 64.0508 / 11.5717, on *Ulmus* twigs on the ground in temperate deciduous forest, May 9, 2014, leg. BN, JBJ, det. BN.

***Rosellinia marcucciana* Ces. Fig. 8.**

A synonyme of this species is *R. britannica* L.E. Petrini, Petrini & S.M. Francis (Petrini 2013). Previously, most material referable to this species (and several others) was identified and filed as *R. mammaeformis*, but *R. marcucciana* is a far more common species. *Rosellinia marcucciana* has larger ascospores and ascus apical plugs than *R. mammaeformis*. It is known from Skåne in Sweden and from 31 Danish collections on a whole range of hardwood hosts.

Material: Vestfold, Nøtterøy, Landsrød, 10.3810 / 59.1788, on *Tilia* wood in temperate deciduous forest, Oct. 27, 2013, leg. & det. BN.



Figure 8. *Rosellinia marcucciana* on fallen branch of a deciduous tree. Photo: C. Reisborg.

***Sphaerostilbella berkeleyana* (Plowr. & Cooke) Samuels & Cand. Fig. 9.**

This species has a single record from Sweden (Skåne) and 8 records from Denmark. Its host *Stereum hirsutum* is a common species and more finds of *S. berkeleyana* may turn up if the species is sought for.

Material: Aust-Agder, Arendal, Stea, 58.4930 / 8.8033, in mixed forest, on *Stereum hirsutum* basidiomata, Oct. 4, 2014, leg. & det. TL, Conf. CL.



Figure 9. *Sphaerostilbella berkeleyana* on the hymenium of *Stereum hirsutum*. Photo: J. H. Petersen.

***Stegosporium pyriforme* (Hoffm.) Corda**

The ascospores of *S. pyriforme* are similar to those of *S. acerophilum*, but differ by spore septation and the size of spore appendages (Voglmayr and Jaklitsch 2008), and their hosts (*Acer pseudoplatanus* vs. *A. saccharum*). Jaklitsch and Voglmayr (2014) described two similar species, *S. protopyriforme* and *S. pseudopyriforme*, which also occur on *A. pseudoplatanus* and which can be reliably distinguished from *S. pyriforme* only by molecular data. *Stegosporium pyriforme* sensu stricto is not with certainty known from Sweden but is known from Denmark (Voglmayr and Jaklitsch 2014).

Material: Aust-Agder, Arendal, Langevoll, Nedenes, 58.4217 / 8.6990, on *Acer pseudo-platanus* twig, Oct. 4, 2014, leg. & det. HV.

***Thelonectria discophora* (Mont.) P. Chaverri & C. Salgado**

A plurivorous species, known from *Salix* in Småland in Sweden, but not from Denmark. Material: Norway, Aust-Agder, Arendal, Stea, Songeskogen, 58.4942 / 8.8049, on *Quercus* bark, Oct. 4, 2014, leg. CL.

***Trichoderma europaeum* Jaklitsch & Voglmayr**

The ascomata of *Trichoderma* species (formerly classified as *Hypocrea*) are only in good condition for a short period, and many require cultivation and sequencing for reliable determination. They can therefore be difficult to study, and many species are certainly undiscovered in Norway. Until recently, *T. europaeum* has been classified as *T. minutisporum* but Jaklitsch and Voglmayr (2015) demonstrated that *T. minutisporum* sensu stricto is confined to North-America, and described *T. europaeum* and *T. mediterraneum* for European collections. Most previous records of *T. minutisporum* from Europe represent *T. europaeum*, which is the most common species in the genus in Europe (Jaklitsch 2011, Jaklitsch

and Voglmayr 2015) including Sweden and Denmark.

Material: Vestfold, Gullkronene Nature Reserve, Lille Gullkrona, 59.2861 / 10.3814, on *Fagus* wood in deciduous forest, Oct. 25, 2013, leg. & det. TL, JHP.

***Trichoderma moravicum* Jaklitsch**

The stromata typically form on decayed wood in moist forest (Jaklitsch 2011). The species appears to be new to Scandinavia.

Material: Vest-Agder, Kristiansand, Nedre Timenes, 58.1642 / 8.1092, on leaf debris in temperate deciduous forest, Oct. 5, 2014, leg. & det. TL.

***Trichoderma silvae-virgineae* Jaklitsch.** Fig. 10. Stromata of *T. silvae-virgineae* may resemble for instance immature stromata of the common but green-spored *T. strictipile*, but is white-spored and has prominent perithecial contours. It was found once in Skåne in Sweden and also once in Denmark.

Material: Vestfold, Horten, Fjugstad, 59.3611 / 10.4637, on *Fagus* wood in temperate deciduous forest, Oct. 24, 2013, leg. & det. TL & JHP.



Figure 10. *Trichoderma silvae-virgineae* on *Fagus* log. Photo: J. H. Petersen.

***Trichoderma strictipile* Bissett**

There are many Norwegian collections determined as *Hypocrea gelatinosa*. The majority of these probably represent *Trichoderma strictipile*, a much more common species in

most of Europe (Jaklitsch 2009, Jaklitsch and Voglmayr 2015). The thirteen collections labeled *H. gelatinosa* in Herb. O were all revised as *H. strictipilosa* by BN and TL in 2013. It occurs north to Uppland in Sweden and has 21 Danish records.

Material: Vestfold, Gullkronene Nature Reserve, Lille Gullkrona, 59.2862 / 10.3832, on decorticated *Quercus* wood in temperate deciduous forest, Oct. 25, 2013, leg. & det. TL, JHP.

***Trichonectria rubefaciens* (Ellis & Everh.) Diederich & Schroers. Fig. 11.**

It is known from the lichen *Pleurosticta acetabulum* in Östergötland and Närke in Sweden (Nordin et al. 2015), but has not been found in Denmark.

Material: Hordaland, Etne, Tungesvikstranda, 59.7338 / 5.9724, parasitic on the thallus of *Lobaria virens* on *Fraxinus excelsior* in a steep slope, May 12, 2013, leg. & det. BN.



Figure 11. *Trichonectria rubefaciens* on the thallus of *Parmelia sulcata*. Photo: J. H. Petersen.

***Trichosphaerella decipiens* E. Bommer, M. Rousseau & Sacc.**

The species is known from Sweden (Skåne, Öland) and has 17 records in Denmark.

Material: Vestfold, Tønsberg, Gullkronene Nature reserve, Lille Gullkrona, 59.2853 / 10.3826, on the hymenium of *Peniophora limitata* on branch of deciduous tree, Oct. 25, 2013. leg. JBJ, det. TL.

***Vialaea insculpta* (Fr.) Sacc. Fig. 12.**

The species is probably quite common on both wild and planted *Ilex aquifolium* bushes. It is new to Scandinavia.

Material: Aust-Agder, Grimstad, Dømmesmoen Park, 58.3562 / 8.5775, on *Ilex aquifolium* twigs, Oct. 4, 2014, leg. & det. BN.



Figure 12. *Vialaea insculpta* ascospores. Photo: B. Nordén.

***Xylomelasma sordida* Réblová**

Xylomelasma sordida belongs to a group of species with immersed perithecia with long protruding necks that often occur on decayed wood of deciduous trees. It was found in Skåne in Sweden and on three occasions in Denmark.

Material: Nord-Trøndelag, Steinkjer, Byahalla NR, 64.0508 / 11.5717, on dead part of coppiced *Ulmus* in deciduous forest, May 9, 2014, leg. BN, JBJ, det. BN.

DISCUSSION

Our survey shows that pyrenomycetous fungi in temperate deciduous forests have been poorly studied in Norway. The low interest in these fungi by both professional and amateur mycologists is striking, for example in comparison with the interest in small and obscure lichenized fungi. The reasons are probably a paucity of academic traditions with few available experts, and the lack of comprehensive and updated determination keys and check-

lists. A first critical check-list of Norwegian Sordariomycetes produced as part of the project (Nordén et al. 2015).

In addition the 40 Sordariomycete species reported here, three species were described as new to science within the project period, *Chlorostroma vestlandicum* (Nordén et al. 2014a), *Bryocentria hypothallina* (Nordén et al. 2015b) and *Stylonectria norvegica* (Lechat et al. 2015), and two were reported as new to Norway in Nordén (2014).

During our intensive search for fungi belonging to class Sordariomycetes in temperate deciduous forests, we also identified several pyrenomycetous fungi new to Norway belonging to other taxonomic groups. The most numerous were species belonging to class Dothideomycetes and to the Chaetothyriomycetidae in Eurotiomycetes, and these findings will be reported elsewhere. Our results highlight the importance of temperate deciduous forests for the diversity of Sordariomycetes and other pyrenomycetous fungi. It is also clear that much work is needed before the wood-inhabiting pyrenomycetous fungi in Norway are satisfactorily known. Further, several species found by us are undescribed and taxonomic work should be intensified.

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