

New national and regional biological records for Finland 4. Additions to the knowledge of Finnish aphyllorphoroid funga (Basidiomycota)

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Byssocorticium efibulatum is reported as new to Finland. New records of following rare or little collected species are presented and notes of their substrates are given: *Cristinia gallica*, *Helicogloea farinacea*, *Helicogloea lagerheimii*, *Phlebia femsioeensis*, *Sistotrema dennisii* and *Tomentella coerulea*. We also list 33 aphyllorphoroid fungi as new to some section of the boreal vegetation zone in Finland.

Introduction

After the extensive work of Finnish aphyllorphoroid fungi (Kotiranta *et al.* 2009) plenty of knowledge has accumulated and new records have been published for example by Kunttu *et al.* (2009, 2010, 2011, 2012) and Kotiranta & Shiryaev (2013). We present here new records including one species new to Finland, six rare or little collected species with only a few earlier records in Finland and 33 aphyllorphoroid fungi new to some section of boreal vegetation zone in Finland.

Material and methods

The aims of these studies have varied but are mostly connected with species inventories of certain areas or ecology of polypores and corticioids. Jorma Pennanen has collected data in inventories

of Metsähallitus (former known as Finnish Forest and Park Service) in protected forest areas in different parts in Finland. Other authors have made field trips mainly during their leisure time at their home region.

Material was collected, identified or confirmed by several researches: PH = Pekka Helo, TH = Teppo Helo, HK = Heikki Kotiranta, MK = Matti Kulju, MO = Martti Ohenoja, JP = Jorma Pennanen, US = Unto Söderholm and HV = Henry Väre. Collector is also identifier if not otherwise stated. Number code after abbreviation of collector is a personal sampling number of certain specimen.

Finnish national uniform grid system (27° E) according to Heikinheimo and Raatikainen (1981) is used for coordinates and abbreviation used here is UCS = Uniform Coordinate System. Biogeographical provinces are according to Hansen & Knudsen (1997). Boreal and hemibo-

real vegetation zones consist of 11 sections which are used in this article (Ahti et al. 1968, Hämet-Ahti 1981). The map of these sections can be found also in the website of Finland's environmental administration (2009). Voucher specimens are deposited in the herbaria of the Universities of Helsinki (H), Turku (TUR), Oulu (OULU) and/or in the reference herbarium of Jorma Pennanen (J.P.) or Heikki Kotiranta (H.Kta).

Nomenclature of the genus *Hyphodontia sensu lato* follows Hjortstam & Ryvarde (2009) and others mainly Kotiranta et al. (2009). The Finnish national red-listing evaluation of IUCN Red List Categories is according to Kotiranta et al. (2010). The decay stage classification (1–5) of trunks is according to Renvall (1995).

Results and discussion

In this article we present *Byssocorticium efbulatum* new to Finland, new records of rare or little collected *Cristinia gallica*, *Helicogloea farinaea*, *Helicogloea lagerheimii*, *Phlebia femsioeensis*, *Sistotrema dennisii* and *Tomentella coerulea* and 33 aphylloroid fungi new to some section of boreal vegetation zone in Finland. Species are presented in alphabetic order. The number of new species to some section of boreal vegetation zone divide as follows: Hemiboreal, Oak zone (1b) 4; Southern boreal, Southwestern Finland and Southern Ostrobothnia (2a) 2; Southern boreal, Lake district (2b) 1; Middle boreal, Ostrobothnia (3a) 2; Middle boreal, Northern Carelia – Kainuu (3b) 11; Middle boreal, Southwestern Lapland (3c) 1; Northern boreal, Kuusamo district (4a) 1; Northern boreal, North Ostrobothnia (4b) 1; Northern boreal, Forest Lapland (4c) 10.

There are one endangered (EN), two vulnerable (VU) and one data deficient (DD) among these species presented here.

List of species

Amylocorticium subincarnatum Peck (Pouzar)

Specimen examined: FINLAND, Nylandia, Raasepori, Jussarö, UCS 6639656:3307600, 27.XI.2012, fallen trunk of *Picea abies*, diam. 25 cm, decay 3, mixed forest of Myrtillus type, JP 2353 (H, J.P.).

Vulnerable. New to Hemiboreal, Oak zone (1b).

Antrodiella romellii (Donk) Niemelä

Specimen examined: FINLAND, Lapponia sompiensis, Savukoski, Urho Kekkonen National Park, Kemihaara-Naltio, UCS 7543423:3584336, 10.IX.2012, fallen trunk of *Betula* sp., diam. 20 cm, decay 4, pine dominated heath forest, JP 2162 (H, J.P.).

New to Northern boreal, Forest Lapland (4c).

Basidiendron cinereum (Bres.) Luck-Allen

Specimen examined: FINLAND, Ostrobothnia ouluensis Pudasjärvi, Puhos, Louhisempuro, 72520:35497, 25.VI.1996, on trunk of *Populus tremula*, MO 6 (OULU), det. MK, conf. HK.

New to Middle boreal, Northern Carelia – Kainuu (3b).

Brevicellium olivascens (Bres.) K.H. Larss. &

Hjortstam

Specimen examined: FINLAND, Ostrobothnia kajanensis, Kajaani, Nakertaja, Särkilahti, east side of the inlet, UCS 7127109:3533355, 26.X.2006, deciduous tree (apparently *Salix caprea*), fallen almost unbarked and mossy trunk, diam. 9 cm, decay 3–4, birch dominated quite young forest (former field), PH 1594 (OULU), det. TH, conf. MK.

New to Middle boreal, Northern Carelia – Kainuu (3b).

Byssocorticium efbulatum Hjortstam &

Ryvarde

Specimen examined: FINLAND, Regio aboënsis Raasepori, Torbyviken NW, UCS 6675568:3308870, 20.X.2012, fallen branch of *Corylus avellana*, diam. 4, decay 2, hazel dominated herb-rich forest, JP 2332 (H.Kta, J.P.), conf. HK.

New to Finland, new to Hemiboreal, Oak zone (1b).

Byssocorticium efbulatum is described by Hjortstam & Ryvarde (1978) from Sweden, holotype grew on *Fagus silvatica*.

Calocera cornea (Batsch.: Fr.) Fr.

Specimen examined: FINLAND, Lapponia sompiensis, Savukoski, Urho Kekkonen National Park, Kemihaara-Naltio, UCS 7542788:3584740, 10.IX.2012, fallen trunk of *Betula* sp., diam. 10, decay 3, pine dominated heath forest, JP 2160 (H, J.P.).

New to Northern boreal, Forest Lapland (4c).

Calocera furcata (Fr.) Fr.

Specimen examined: FINLAND, Lapponia sompiensis, Sodankylä, Urho Kekkonen National Park, Aittajärvi-Luirojärvi, UCS 7565487:3544449, 19.IX.2012, fallen trunk

of *Pinus sylvestris*, diam. 40 cm, decay 2, pine dominated heath forest, JP 2214 (H, J.P.).

New to Northern boreal, Forest Lapland (4c).

Clavariadelphus pistillaris (L. : Fr.) Donk

Specimen examined: FINLAND, Lapponia sompiensis, Savukoski, Urho Kekkonen National Park, Kemihaara-Naltio, UCS 7541667:3587211, 11.IX.2012, on ground in Myrtilus type heath forest, JP 2175 (H, J.P.).

New to Northern boreal, Forest Lapland (4c).

Cristinia gallica (Pilát) Jülich

Specimen examined: FINLAND, Nylandia, Kirkkonummi, Upinniemi, UCS 6661105:3354313, 13.X.2011, sawed stump of unidentified deciduous tree, diam. 30 cm, decay 3, moist herb-rich forest with cultural impact, JP 1887 (H, H.Kta, J.P.), conf. HK; Regio aboënsis, Raasepori, Torbyviken NW, UCS 6675559:3308867, 20.X.2012, fallen branch of *Corylus avellana*, diam. 4 cm, decay 2, hazel dominated herb-rich forest, JP 2333 (H.Kta + J.P.), conf. HK.

Vulnerable. New to Hemiboreal, Oak zone (1b).

There are only two earlier records in Finland, both made in Åland islands. Fruitbodies grew on *Corylus avellana* (Kotiranta et al. 2009).

Exidia cartilaginea S. Lundell & Neuhoff

Specimen examined: FINLAND, Ostrobothnia kajanensis, Sotkamo, Korholanmäki, Kuohunpuro, UCS 7105561:3545195, 8.XI.2011, on fallen barked branch of *Betula* sp., diam. 7 cm, decay 2, old trenched spruce swamp, PH 2220 (OULU), det. TH.

New to Middle boreal, Northern Carelia – Kainuu (3b).

Exidia grandulosa (Bull. : Fr.) Fr.

Specimen examined: FINLAND, Ostrobothnia kajanensis, Kajaani, Variskangas, Tilhitie, UCS7123737:3537553, 1.XI.2011, barked fallen branch of *Sorbus aucuparia* or *Salix* sp., diam. 1 cm, decay 2, moist birch forest, PH 2180 (OULU), det. TH.

New to Middle boreal, Northern Carelia – Kainuu (3b).

Exidia recisa (Ditmar : Fr.) Fr.

Specimen examined: FINLAND, Ostrobothnia kajanensis, Kajaani, Suvantola, Ilmarata, UCS 7126953:3533884, 2.XI.2011, dead branch of *Salix* sp., on height of 80 cm, diam. 4 cm, decay 1, dense willow dominated area in deciduous forest, PH 2255 (OULU), det. TH.

New to Middle boreal, Northern Carelia – Kainuu (3b).

Exidia saccharina (Alb. & Schwein. : Fr.) Fr.

Specimen examined: FINLAND, Ostrobothnia kajanensis, Paltamo, Kuuskanlahti, Teerivaara, UCS 7146819:3514051, 3.X.2012, fallen trunk of *Pinus sylvestris*, diam. 25 cm, decay 1-2, old pine dominated Vaccinium type heath forest with a lot of dead wood, TH T4004 (OULU).

New to Middle boreal, Northern Carelia – Kainuu (3b).

Helicogloea farinea (Höhn.) D.P. Rogers

Specimen examined: FINLAND, Tavastia australis, Tampere, Iidesjärvi, UCS 68232:33308, 21.X.2012, decorticated twig of *Salix* sp., lakeside thicket forest, US 4522 (TUR); Tavastia australis, Lempäälä, Houkkalammi, UCS 68130:33251, 14.XI.2011, decorticated twig of *Pinus sylvestris*, pine dominated heath forest, US 4405 (TUR).

New to Southern boreal, Southwestern Finland and Southern Ostrobothnia (2a).

There are two earlier records made in Finland: Regio aboënsis, Karjalohja and Nylandia, Helsinki, both on southern coast of Finland, (1a). In those cases the fruit bodies grew on *Acer pseudoplatanus* and *Populus tremula* (Kotiranta et al. 2009).

Helicogloea lagerheimii Pat

Specimen examined: FINLAND, Tavastia australis, Nokia, Pitkäniemi, Hevoshaka, UCS 68243:33186, 10.VIII.2010, fallen trunk of *Sorbus aucuparia*, herb-rich forest dominated by deciduous trees with plenty of dead wood, US 4241 (H).

New to Southern boreal, Southwestern Finland and Southern Ostrobothnia (2a).

There are four earlier records in Finland: Regio aboënsis, Kemiönsaari (1a), Nylandia, Helsinki (1a), Satakunta, Siikainen (3a) and Ostrobothnia ultima, Rovaniemi (3c) (Kotiranta et al. 2009, Kunttu 2010).

Hydnum repandum L. : Fr.

Specimen examined: FINLAND, Lapponia sompiensis, Sodankylä, Urho Kekkonen National Park, Jaurujoki, UCS 7559584:3561041, 1.IX.2012, on the ground in spruce dominated Hylocomium-Myrtilus forest type, JP 2097 (H, J.P.).

New to Northern boreal, Forest Lapland (4c).

Irpex lacteus (Fr.) Fr.

Specimen examined: FINLAND, Ostrobothnia kajanensis, Sotkamo, Maanselkä, Naulavaara, UCS 7089005:3560357, 21.VIII.2012, *Sorbus aucuparia*, felled trunk (thinning waste), diam. 9 cm, decay stage 1, partly barked, young lush mixed forest, TH T4003 (OULU); Ostrobothnia ka-

janensis, Sotkamo, Maanselkä, peak of Naulavaara, UCS 7088058:3560668, 26.IX.2012, partly barked, felled trunk of *Betula* sp. (thinning waste), diam. 4 cm, decay 3, young lush mixed forest, PH 2384 (OULU), det. TH. TH and PH have collected several specimens at this same area.

New to Middle boreal, Northern Carelia – Kainuu (3b).

Kneiffiella abieticola (Bourdot & Galzin) Jülich & Stalpers

Specimen examined: FINLAND, Lapponia sompiensis, Sodankylä Urho Kekkonen National Park, Aittajärvi-Porttikoski, 7587070:3540572, 28.VIII.2012, fallen trunk of *Pinus sylvestris*, diam. 25 cm, decay 4, pine dominated heath forest, JP 2078 (H, J.P.).

New to Northern boreal, Forest Lapland (4c).

Metulodontia nivea (P. Karst.) Parmasto

Specimen examined: FINLAND, Ostrobothnia ultima, Tervola, Runkaus strict nature reserve, south part, UCS 7329960:3430907, 1.IX.2010, fallen trunk of *Pinus sylvestris*, diam. 30 cm, decay 3, Vaccinium type forest, JP 1341 (H, J.P.).

New to Middle boreal, Southwestern Lapland (3c).

Phlebia albida H. Post

Specimen examined: FINLAND, Ostrobothnia kajanensis, Suomussalmi, Näljänkä, Riуска, Paloaho, UCS 3587981:7243407, 20.VIII.2005, fallen, unbarked and charred trunk of *Pinus sylvestris* (?), length 1 m, diam. 17 cm, decay 2, burnt clear-cut area in old coniferous forest, TH and PH 1421 (OULU), det. MK, conf. HK.

New to Middle boreal, Northern Carelia – Kainuu (3b)

Phlebia femsioeensis (Litsch. & S. Lundell)

J. Erikss. & Hjortstam

Specimen examined: FINLAND, Tavastia australis, Hämeenlinna, Kalvola, Kaskenmäki nature reserve, UCS 6781882:3343128, 6.X.2011, fallen trunk of *Picea abies*, diam. 15 cm, decay 4, old spruce dominated Myrtillus forest type, JP 1866 (H, J.P.).

There are two earlier Finnish records: Regio aboënsis, Koski (2a) and Ostrobothnia kajanensis, Kuhmo (3b). Substrates were advanced decayed *Pinus* and *Picea* (Kotiranta et al. 2009).

Piloderma olivaceum (Parmasto) Hjortstam

Specimen examined: FINLAND, Ostrobothnia ouluensis, Ylikiiminki, Huumojärvi, Varti-Jylmä SE, UCS 722260:345580, 26.IX.1998, on *Pinus sylvestris*, MO 21 (OULU),

det. MK; Ostrobothnia ouluensis, Oulu, Pikkarala, Kivelänkangas, UCS 72025:34416, 26.VIII.2001, on *Pinus sylvestris*, MK 66/01 (OULU); Ostrobothnia ouluensis, Oulu, Metelinmäki, UCS 7201659:3445691, 11.X.2009, on *Pinus sylvestris*, MK 36/09 (OULU); Ostrobothnia kajanensis, Vaala, Rokua National Park, UCS 7162766:3475374, 23.VIII.2005, on *Pinus sylvestris*, MK 43/05 (OULU). Regio kuusamoënsis, Taivalkoski, Kylmäluomankangas, UCS 7276282:3581294, 11.IX.2007, on *Pinus sylvestris*, MK 45/07 & Virpi Poutanen (OULU), det. MK. Lapponia sompiensis, Sodankylä, Lokka, Kupperoisenpalo north part, UCS 75199:35316, 3.IX.1992, on *Pinus sylvestris*, HV (OULU), det. MK; Lapponia sompiensis, Sodankylä, Aska, Askankangas south part, UCS 74649:34879, 23.VIII.1994, on *Pinus sylvestris*, HV (OULU), det. MK. Lapponia inarensis, Inari, Inarinjärvi, Madelahti, UCS, 76552:35144, 28.VIII.2000, MK 158/00 (OULU); Lapponia inarensis, Inari Nanguniemi, Mielgnjarga, UCS 76371:35338, MK 219/00 (OULU).

New to Middle boreal, Ostrobothnia (3a), new to Northern boreal, Kuusamo district (4a), new to Northern boreal, North Ostrobothnia (4b) and new to Northern boreal, Forest Lapland (4c).

Piloderma sphaerosporum Jülich

Specimen examined: FINLAND, Ostrobothnia media, Reisjärvi, Eteläsydänmaa nature reserve, UCS 70456:34024, 19.IX.1999, on *Pinus sylvestris*, MK 125/99 (OULU); Ostrobothnia media, Reisjärvi, Eteläsydänmaa nature reserve, UCS 70456:34022, 31.X.1999, on *Pinus sylvestris*, MK 350/99 (OULU).

New to Middle boreal, Ostrobothnia (3a).

Pseudohydnum gelatinosum (Scop. : Fr.)

P. Karst.

Specimen examined: FINLAND, Ostrobothnia kajanensis, Hyrynsalmi, Lietekylä, Lumivaara, UCS 7174377:3558187, 15.IX.2012, fallen trunk of *Picea abies*, diam. 35 cm, decay 3, old and lush spruce dominated swamp, TH T4002 (OULU). TH has over 20 records, but this is the first collected specimen.

New to Middle boreal, Northern Carelia – Kainuu (3b).

Rigidoporus crocatus (Pat.) Ryvarden

Specimen examined: FINLAND, Nylandia, Helsinki, Mustavuori nature reserve, UCS 6681847:3397772, 16.IX.2011, fallen trunk of *Alnus glutinosa*, diam. 25 cm, decay 3, trunk tightly against ground in seasonal flooded alder forest, JP 1797 (H, J.P.).

Endangered and status with special protection. New to Hemiboreal, Oak zone (1b).

Sistotrema dennisii Malençon

Specimen examined: FINLAND, Lapponia sompiensis, Sodankylä, Urho Kekkonen National Park, Kopsusjärvi, UCS 7576104:3519252, 23.VIII.2012, fallen and charred branch of *Pinus sylvestris*, diam. 5 cm, decay 3, pine dominated heath forest, JP 2046 (H, J.P.); Lapponia sompiensis, Savukoski, Urho Kekkonen National Park, Kemihaara-Naltio, UCS 7542255:3584987, 10.IX.2012, root-stalk of *Pinus sylvestris*, diam. 30 cm, decay 3, spruce dominated Hylocomium-Myrtillus forest type, JP 2157 (H, J.P.).

Data deficient. There are five earlier records from South Finland to Lapland, mostly on coniferous trees (Kotiranta *et al.* 2009).

Skeletocutis papyracea A. David

Specimen examined: FINLAND, Lapponia sompiensis, Sodankylä, Urho Kekkonen National Park, Kopsusjärvi, UCS 7572049:3523301, 21.VIII.2012, fallen trunk of *Picea abies*, diam. 25 cm, decay 4, Spruce dominated HMT-forest, JP 2039 (H, J.P.).

New to Northern boreal, Forest Lapland (4c).

Stereopsis vitellina (Plowr.) D. A. Reid

Specimen examined: FINLAND, Ostrobothnia kajanensis, Paltamo, Kuuskanlahti, Teerivaara, UCS 7145310:3515587, 4.X.2012, on ground, in a hole of charred root-stock of *Pinus sylvestris*, quite old Calluna type pine forest with old charred rootstocks, TH T4001 (OULU).

New to Middle boreal, Northern Carelia – Kainuu (3b).

Tomentella coerulea (Bres.) Höhn. & Litsch.

Specimen examined: FINLAND, Tavastia borealis, Rautalampi, Kalajanvuori UCS 6942307:3481846, 7.X.2012, fallen trunk of *Alnus incana*, diam. 10 cm, decay 3, heath forest, JP 2303 (H.Kta, J.P.), conf. MK.

New to Southern boreal, Lake district (2b).

There are four earlier Finnish records: Regio aboënsis, Kemiönsaari (1a), Parainen (1a) and Ostrobothnia ultima, Rovaniemi (3c). Substrates were *Populus tremula* and *Betula* sp. (Kotiranta *et al.* 2009, Kunttu *et al.* 2012).

Trechispora nivea (Pers.) K.H. Larss.

Specimen examined: FINLAND, Lapponia sompiensis, Sodankylä, Urho Kekkonen National Park, Aittajärvi-Porttikoski, UCS 7585280:3537953, 29.VIII.2012, fallen trunk of *Betula* sp., diam. 15 cm, decay 4, pine dominated heath forest, JP 2085 (H, J.P.).

New to Northern boreal, Forest Lapland (4c).

Xylodon crustosus (Pers.) Chevall.

Specimen examined: FINLAND, Ostrobothnia kajanensis, Kajaani, Nakertaja, Särkilähti, east side of the inlet, UCS 7127129:3533337, 26.X.2006, partly barked fallen trunk of *Alnus glutinosa*, diam. 5 cm, decay 3, birch dominated quite young forest (former field), PH 1602 (OULU), (photo), det MK.

New to Middle boreal, Northern Carelia – Kainuu (3b).

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References

- Ahti, T., Hämet-Ahti, L. & Jalas, J. 1968: Vegetation zones and their sections in northwestern Europe. — *Ann. Bot. Fennici* 5: 169–211.
- Finland's environmental administration 2009: Sections of boreal vegetation zone. — Website: <http://www.ymparisto.fi/download.asp?contentid=115160&lan=sv>. 16.3.2013
- Hämet-Ahti, L. 1981: The boreal zone and its biotic subdivision. — *Fennia* 159(1): 69–75.
- Hansen, L. & Knudsen, H. 1997 (eds.): Nordic macromycetes 3. Heterobasidioid, aphylloroid and gastro-mycetoid basidiomycetes. — 444 p. Nordsvamp. Copenhagen.
- Heikinheimo, O. & Raatikainen, M. 1981: Grid references and names of localities in the recording of biological finds in Finland. — *Notulae Entomologicae* 61: 133–154. (In Finnish with English summary).
- Hjortstam, K. & Ryvarde, L. 1978: Notes on Corticiaceae (Basidiomycetes) III. — *Mycotaxon* 7: 407–410.
- Hjortstam, K. & Ryvarde, L. 2009: A checklist of names in Hyphodontia sensu stricto – sensu lato and Schizopora with new combinations in *Lagarobasidium*, *Lyomyces*, *Kneiffiella*, *Schizopora* and *Xylodon*. — *Synopsis Fungorum* 26.
- Kotiranta, H., Saarenoksa, R. & Kytövuori, I. 2009: Aphylloroid fungi of Finland. A Check-list with ecology, distribution, and threat categories. — *Norrinia* 19: 1–223.
- Kotiranta, H. & Shiryaev, A. 2013: Notes on Aphylloroid fungi (Basidiomycota) in Kevo, collected in 2009. — *Kevo Notes* 14: 1–22.
- Kotiranta, H., Junninen, K., Saarenoksa, R., Kinnunen, J. & Kytövuori, I. 2010: Aphyllorales & Heterobasidiomycetes. — In: Rassi, P., Hyvärinen, E., Juslén, A. & Mannerkoski, I. (eds), *The 2010 Red List of Finnish Species*: 249–263. Ympäristöministeriö & Suomen ympäristökeskus, Helsinki.

- Kunttu, P., Kosonen, T., Kulju, M. & Kotiranta, H. 2009: *Phlebia cremeoalutacea* new to Finland and new records of rare corticioid fungi (Basidiomycota). — *Karstenia* 49: 69–71.
- Kunttu, P., Kulju, M. & Kotiranta, H. 2010: Rare corticioid fungi in Finland – records of new and little collected species (Basidiomycota). — *Karstenia* 50: 35–44.
- Kunttu, P., Kulju, M., Pennanen, J., Kotiranta, H. & Halme, P. 2011: Additions to the Finnish Aphyllorphoroid fungi. — *Folia Cryptog. Estonica* 48: 25–30.
- Kunttu, P., Kulju, M. & Kotiranta, H. 2012: New national and regional biological records for Finland 2. Contributions to the Finnish aphyllorphoroid fungi (Basidiomycota). — *Memoranda Soc. pro Fauna et Flora Fennica* 88: 61–66.
- Renvall, P. 1995: Community structure and dynamics of wood-rotting Basidiomycetes on decomposing conifer trunks in northern Finland. — *Karstenia* 35: 1–51.