

Melaspilea galligena sp. nov. and some other lichenicolous fungi from Russia

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Abstract: Thirty species of lichenicolous fungi are reported, many being new to various regions of Russia. *Melaspilea galligena* sp. nov. growing on *Pertusaria* cf. *cribellata* is described from Russian Far East. A possibly new lichenicolous *Toninia* species (on *Parmelina tiliacea*) and a species of *Arthonia* (on *Cladonia*) with 1–2-septate ascospores resembling poorly known *A. lepidophila* are described, illustrated and discussed. *Dactylospora suburceolata* is reported new to Russia and Asia, growing on a new host species *Mycobilimbia carneoalbida*. *Tremella cetrariicola* is new to Siberia and *Chyveococcum cetrariae* is newly documented on *Vulpicida*.

INTRODUCTION

Taxonomic diversity and distribution of lichenicolous fungi of Russia is still far from being reasonably revealed. This is proved by results of identification by the first author of miscellaneous specimens of these fungi collected by the second author in various regions of Russia presented below. The aims of the paper are to describe a new lichenicolous *Melaspilea* species and draw attention to another possibly new lichenicolous *Toninia* species, as well as discuss some insufficiently known species and provide new information on distribution and ecology of lichen-dwelling fungi.

MATERIAL AND METHODS

The specimens were examined using Zeiss microscopes Stemi 2000-CS and Axio Imager A1 equipped with Nomarski differential interference contrast (DIC, $\times 1000$) optics. Microscopical examination was done in water, 10 % KOH (K), Lugol's iodine directly (I) or after a KOH pretreatment (K/I), Brilliant Cresyl blue (BCr), 10% HNO₃ (N) or ethanol solution of paraphenylenediamine (P). The length, breadth and length/breadth ratio (l/b) of ascospores are given as: (min–){ \bar{X} –SD}–{ \bar{X} +SD}{(–max)}, where min and max are the extreme values, \bar{X} the arithmetic mean, and SD the corresponding standard deviation.

All specimens have been collected by Ilya S. Zhdanov and identified by Mikhail P. Zhurbenko. Biogeographic novelties are mainly referred to the current administrative subdivision of Russia. Examined specimens are deposited in LE-Fungi herbarium.

THE SPECIES

ARTHONIA sp. – Krasnoyarsk Territory, Evenkiya District, lower Podkamennaya Tunguska River, Central Siberian Biosphere Reserve, near Stolbovaya River mouth, 62°07'23.1"N, 91°30'54.8"E, *Pinus sylvestris*-*Larix* forest, on basal squamules of *Cladonia* sp. growing on bark of *Pinus sylvestris*, 14.08.2008 (LE 260900).

Description – *Vegetative hyphae* immersed, brown, flexuose, 2–4 μ m diam. *Ascomata* brownish black, glossy, rough, superficial, irregularly convex to subglobose, 50–180 μ m diam., dispersed, contiguous or fused (then up to 500 μ m across) (Fig. 1); section K– in all parts. *Epithecium* medium olive brown, ca. 5 μ m tall. *Hymenium* pale olive brown above, hyaline below, 25–35 μ m tall, I+ red, K/I+ blue with red stripes. *Paraphyses* rather indistinct. *Hypothecium* pale olive brown to almost hyaline, 20–30 μ m tall. *Asci* broadly clavate, 24–28(–31)

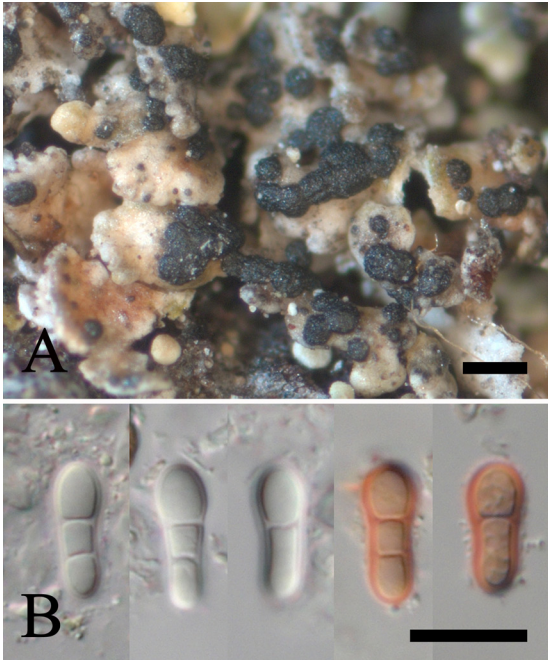


Fig. 1. *Arthonia* sp. (LE 260900). A – habitus of apothecia; B – ascospores (left, in water; right, in I). Bars: A = 200 μ m; B = 10 μ m.

\times (11–)12–16(–17) μ m ($n = 12$, in water or I), 8-spored. Ascospores hyaline, soleiform, with enlarged to often capitate upper cell, (9.0–)10.7–13.1(–14.4) \times (3.5–)3.9–4.7(–5.3) μ m, 1/b = (2.2–)2.5–3.1(–3.5) ($n = 55$, in water, I, K or K/I), 1–2-septate, wall ca. 0.5 μ m thick, smooth, distinct halo not observed (Fig. 1). Grows on the upper side of *Cladonia* basal squamules and on its podetium, which are distinctly bleached under infection.

Notes – The only formerly known *Arthonia* species growing on *Cladonia* and having ascospores with more than one septum is *A. lepidophila* (Anzi) Clauzade, Diederich & Cl. Roux ined. Description of this species, yet known only from old collections in the Alps (Anzi, 1868; Keissler, 1930), fits in general examined material, but differs in stating ascomata with greenish pruina, longer asci (60 \times 10–12 μ m), and 1–3-septate ascospores.

CLYPEOCOCCUM CETRARIAE Hafellner – Krasnoyarsk Territory, Evenkiya District, lower Podkamennaya Tunguska River, Central Siberian Biosphere Reserve, near Stolbovaya River mouth,

62°07'56.3"N, 91°32'11.2"E, *Pinus sylvestris*-*Picea obovata* forest, on the upper side of *Vulpicida pinastris* lobes, 18.07.2009 (LE 260729).

Notes – Ascomata 50–90 μ m diam. Asci with 4 mature, but sometimes with 5–6 germinating spores. Ascospores medium olive brown to dark brown, verruculose (clearly seen in moderately pigmented spores), halo not observed, (12.2–)13.4–15.0(–16.2) \times (5.5–)5.8–7.0(–8.5) μ m, 1/b = (1.6–)2.0–2.4(–2.6) ($n = 64$, in water). In the species protologue (Hafellner, 1994) its ascomata were described being ca. 80–120 μ m diam. and ascospores somewhat narrower (13–17 \times 4.5–6 μ m) and with thin halo when young. The species was formerly known in Russia from a single finding in arctic Yakutiya (Zhurbenko, 2002a). Previously reported only from *Cetraria* and *Flavocetraria* species, *Vulpicida* being a new host genus.

CORTICIFRAGA FUEKELII (Rehm) D. Hawksw. & R. Sant. – Murmansk Region, Lapponia Imandrae, Kandalaksha Nature Reserve, Por'ya Bay, Glubokie Ludy Islands, Glubokii Island, 66°43'20.8"N, 33°48'58.4"E, *Populus tremula* forest, on thallus of *Peltigera rufescens*, 27.06.2010 (LE 260649).

Note – Known from many regions of Russia, including Murmansk Region (Zhurbenko, 2001, 2007).

DACTYLOSPORA AMYGDALARIAE Triebel – Murmansk Region, Lapponia Imandrae, Iolgi-Tundry Mountains, S bank of Maloe Glubokoe Lake, 67°12'40"N, 33°14'40"E, rocks in *Picea obovata*-*Betula* forest, on cephalodia of *Amygdalaria elegantior*, 23.07.2001 (LE 260738).

Note – Known from many regions of Russia, including Murmansk Region (Zhurbenko, 2007, 2009).

DACTYLOSPORA DEMINUTA (Th. Fr.) Triebel – Yamal-Nenets Autonomous Area, E coast of Baidaratskaya Bay, near Yarayakha River mouth, 69°16'13.2"N, 68°07'28.3"E, wooden house in tundra, on apothecia and thallus of *Biatora subduplex* growing on lignum, 6.08.2007 (LE 260648).

Note – Known from many regions of Russia, including Yamal-Nenets Autonomous Area (Zhurbenko, 2007, 2009).

DACTYLOSPORA SUBURCEOLATA Coppins & Fryday – Krasnoyarsk Territory, Turukhansk District,

near Podkamennaya Tunguska River mouth, Central Siberian Biosphere Reserve, right bank of Enisei River in front of N extremity of Komsinskii Island, 61°53'N, 89°20'E, *Abies sibirica*-*Picea obovata* forest, on thallus of *Mycobilimbia carnealbida* growing on bark, 7.07.2009 (LE 260880).

Notes – Ascospores (15.3–)16.2–21.0(–25.8) × (5.0–)5.6–7.4(–8.9) μm, 1/b = (2.1–)2.5–3.3(–3.9) (n = 66, in K), (1–)3-septate, not to markedly constricted at the septa, granulate (seen only in DIC optics!), often guttulate. This recently described species (Fryday & Coppins, 2012) is remarkable for its granulate ascospores (Fig. 2), rarely occurring in the genus. It was so far known from Scotland and Switzerland (Fryday & Coppins, 2012). New to Russia and Asia. *Mycobilimbia carnealbida* is a new host species.



Fig. 2. *Dactylospora suburceolata* (LE 260880). Granulate ascospores (in K, 100× oil immersion objective, DIC optics).

ENDOCOCCUS RUGULOSUS Nyl. s. l. – Murmansk Region, Lapponia Imandrae, Kolvitskie Tundry Mountains, top of Domashnyaya Mountain, 67°03'30"N, 32°58'00"E, alt. 460 m, rocks in mountain tundra, on thallus of *Rhizocarpon copelandii*, 4.09.2001 (LE 260779). – Yamal-Nenets Autonomous Area, SW coast of Baidaratskaya Bay, lower Ngoyuyakha River mouth, 68°45'57.8"N, 66°43'17.7"E, rocks by the river

bank, on thallus of *Aspicilia* sp., 28.07.2007 (LE 260728).

Note – Known from many regions of Russia, including Murmansk Region and Yamal-Nenets Autonomous Area (Zhurbenko, 2007, 2009; Urbanavichus et al., 2008).

GELTINGIA ASSOCIATA (Th. Fr.) Alstrup & D. Hawksw. – Yamal-Nenets Autonomous Area, SW coast of Baidaratskaya Bay, E of Ngoyuyakha River mouth, 68°51'01.1"N, 66°53'03.0"E, tundra, on thallus of *Ochrolechia* sp. growing on mosses, 30.07.2007 (LE 260698a); E coast of Baidaratskaya Bay, near Yarayakha River mouth, 69°16'27.9"N, 68°08'58.9"E, tundra, on apothecia and thallus of *Ochrolechia inaequatula*, 6.08.2007 (LE 260688).

Note – New to Western Siberia.

HOMOSTEGIA PIGGOTII (Berk. & Broome) P. Karst. – Murmansk Region, Karelia Keretina, Kandalaksha Nature Reserve, S coast of Velikii Island, NE of Cape Kindo, near Lobanikha Bay, 66°33'16.1"N, 33°15'08.6"E, rocks in *Pinus sylvestris* forest, on thallus of *Parmelia saxatilis*, 26.08.2007 (LE 260629).

Note – New to Murmansk Region.

INTRALICHEN LICHENICOLA (M.S. Christ. & D. Hawksw.) D. Hawksw. & M.S. Cole – Central Federal District, Ryazan Region, Spassk District, Okskii Biosphere Reserve, near Lipovaya Gora Cabin, 54°44'00.1"N, 40°58'10.3"E, on hymenium of apothecia of *Candelariella aurella* growing on concrete pillar, 25.07.2010 (LE 260610).

Note – The species was formerly known in Central Federal District only from Tver Region (Notov et al., 2011).

LICHENOCHORA POLYCOCCOIDES Hafellner & R. Sant. – Murmansk Region, Lapponia Imandrae, Kandalaksha Nature Reserve, near Luven'ga, S coast of Vlasov Berezhnoi Island, 67°04'30"N, 32°42'00"E, on thallus of *Physcia dubia* growing on coastal rocks, 8.07.2005 (LE 260609).

Note – New to Murmansk Region.

LICHENOCONIUM PYXIDATAE (Oudem.) Petr. & Syd. – Krasnoyarsk Territory, Evenkiya District, lower Podkamennaya Tunguska River, Central Siberian Biosphere Reserve, lower Tanimakit River, 62°30'00.4"N, 91°29'50.8"E, on moribund podetia of *Cladonia coniocraea* growing on rotten wood, 18.08.2008 (LE 260860).

Note – The species was formerly known in Krasnoyarsk Territory (Central Siberia) only from Severnaya Zemlya Archipelago (Zhurbenko & Alstrup, 2004).

MELASPILEA GALLIGENA Zhurb. & I. Zhdanov sp. nov.

Mycobank No. – MB 804578

Similar to *Labrocarpon canariense*, but without periphysoids, with larger ascospores, (20.7–)22.5–25.9(–30.0) × (10.0–)11.2–13.6(–15.6) μm vs. (13.8–)15.4–19.8(–21.0) × (6.0–)6.8–8.6(–9.5) μm, and inducing galls-formation.

Type – Russia, Primorye Territory, Chuguevka District, Sikhote-Alin' Range, Snezhnaya Mountain, 43°44'15.2"N, 134°25'35.5"E, alt. 1510 m, stone field among *Pinus pumila* shrubs, on saxicolous *Pertusaria* cf. *cribellata* (thallus), 17.09.2007, I. S. Zhdanov (LE 260769 – holotype).

Description (Fig. 3) – *Ascomata* originating deeply in the host thallus, initially completely immersed, closed, round to ellipsoid in cross section, then erumpent (but still immersed, never superficial) and widely exposing the hymenium, more or less cup- or saucer-shaped in cross section, often with bent inward margins, irregularly angular rounded to elongated in surface view, up to 650 μm across; disk black, matt, rough, at first dot- or slit-like, then exposed, at the host thallus level, more or less flat, surrounded by concolorous, elevated, tuberous excipular margin; dispersed, contiguous or fused by a few and sometimes looking multilocular, aggregated by up to 150 or more on bullate galls up to 6.5 mm across concolorous with the host thallus. *Proper exciple* cupulate when mature, continuous below the hymenium, often flat at the base, dark brown, uneven in thickness, in cross section of *textura intricata*; K+ olive brown; lateral part 30–100 μm thick, usually markedly swollen and with protruding rounded hyphal tips in the uppermost part; basal part mainly 15–40 μm thick, occasionally with up to 80 μm thickened portions usually located in its center. *Epithecium* medium brown, finely granulose, 20–30 μm tall, K+ olive brown. *Hymenium* hyaline, occasionally with reddish crystalline speckles (DIC optics!), 70–120 μm tall, I–, K/I+ pale blue. *Hypothecium* indistinct, hyaline to pale brown, 10–20 μm tall. *Hamathecium* completely filling ascomata initials and at that stage resembling interascal pseudoparenchyma, later of fre-

quently branched, anastomosed, septate, often constricted at the septa paraphyses composed of very unequal, often angular inflated cells 2–9 μm diam., with swollen, conglutinated tips 4–9.5 μm diam. Asci elongate-clavate, generally with tall tholus and distinct ocular chamber, ca. 70–90 × 20 μm, plasma I and K/I+ pale yellow to orange, otherwise I and K/I–, (6–)8-spored. *Ascospores* long pale then medium brown, sole-shaped to broadly obovate, 1-septate, usually markedly constricted at the septum, with upper cell broader than lower one, rounded at the ends, (20.7–)22.5–25.9(–30.0) × (10.0–)11.2–13.6(–15.6) μm, 1/b = (1.6–)1.8–2.2(–2.5) (n = 116, in water, I, K or K/I), sometimes with 1(–2) large guttules in each cell (better seen in K), wall smooth, thin, readily tearing in squash preparations, without halo, K+ grey or vinaceous brown. A *conidioma* with hyaline, bacilliform, rounded at the apex and truncate at the base conidia ca. 7–8 × 1.5 μm was found among *ascomata* of the fungus. The species grows on thallus of saxicolous *Pertusaria* cf. *cribellata* (mature ascospores not found, section of verrucae K+ red, P+ orange). The fungus induces galls, otherwise symptoms of distinct pathogenicity were not observed.

Notes – The new species resembles *Labrocarpon canariense* (D. Hawksw.) Etayo & Pérez-Ortega (basionym: *Melaspilea canariensis* D. Hawksw.) also growing on saxicolous species of *Pertusaria*, which differs in its lirelliform, sometimes branched, partly immersed to superficial apothecia with slit-like (never widely exposed) discs, excipular cells densely interspersed with dark brown granules, I+ blurry blue hymenium, smaller ascospores measuring (13.8–)15.4–19.8(–21.0) × (6.0–)6.8–8.6(–9.5) μm, 1/b = (1.9–)2.1–2.5(–2.8) (n = 58, in water, K, I or K/I), and in the absence of gall-formation (examined topotype of *Labrocarpon canariense*). It is noteworthy, that in the examined specimens of *Melaspilea galligena* and *Labrocarpon canariense* we have not found distinct periphysoids developing from the inner part of exciple, which discriminate *Labrocarpon* Etayo & Pérez-Ortega from *Melaspilea* Nyl. (Pérez-Ortega & Etayo, 2010). However, in both compared specimens inward curved marginal parts of exciple contained poorly developed paraphyses, which might resemble periphysoids. In the examined specimen of *Labrocarpon canariense* we observed sometimes branched apothecia, exciple 20–50 μm thick, without basal stalk-like exten-

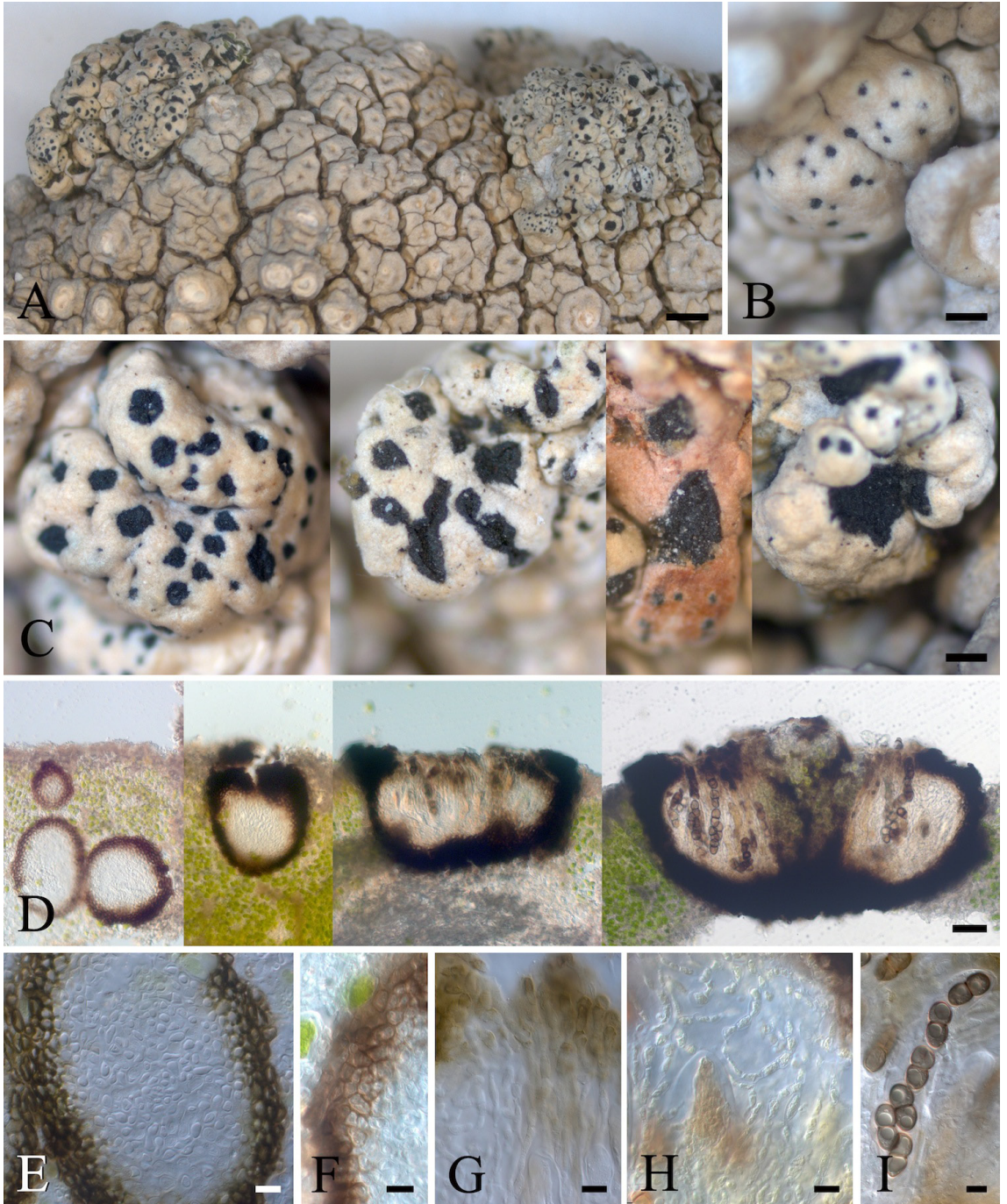


Fig. 3. *Melaspilea galligena* (holotype). A – gall-formation induced by the fungus; B, C – habitus of ascomata with different degree of hymenium exposition; D – cross sections of ascomata at different stages of maturation (in water); E – immature hamathecium resembling interascal pseudoparenchyma (in K); F – exciple in cross section (in water); G – epithecium (in K); H – mature hamathecium (in I), I – ascospores (in K). Bars: A = 1 mm; B, C = 200 μ m; D = 50 μ m; E–I = 10 μ m.

sion, and a vague I+ blue staining of the hymenium, not mentioned in the species protologue (Hawksworth, 1982). We also confirm K/I+ blue reaction of its hymenium noted by Calatayud et al. (1995). Placement of the new species in *Melaspilea* seems to be most appropriate, despite the fact that species of this genus often have I+ blue hymenium, and are mostly lichenized, though often with evanescent or scarcely apparent thallus (Sanderson et al., 2009). Compared to the other *Melaspilea* species, *M. galligena* seems to be most similar to lichenicolous *M. leciographioides* Vouaux growing on *Bagliettoa* and *Verrucaria*, which can be distinguished by its superficial apothecia, I+ blue hymenium and smaller (to 3.5 µm wide) apices of paraphyses (Roux et al., 2003; Sanderson et al., 2009). Treated material also strongly resembles species of lichenicolous genus *Buelliella* Fink, one of which, *B. minimula* (Tuck.) Hafellner, grows on *Pertusaria*. However, mature ascomata in this genus are sessile, and *B. minimula* is additionally distinguished by its smaller ascospores, 16–22 × 6–12 µm, with perispore (Hafellner, 2004; Ihlen & Wedin, 2008).

Specimen of *Labrocarpon canariense* examined for comparison – Africa, Canary Islands, Tenerife, S of Garachico, W of San Juan del reparo, 28°21'N, 16°45'W, alt. ca. 565 m, lava flow, on thallus of *Pertusaria* sp. growing on volcanic rock, 23.07.2007, P. Diederich (the specimen was collected in a site very close to the type locality and distributed by J. Hafellner as Lichenicolous Biota No. 25).

MERISMATIUM HETEROPHRACTUM (Nyl.) Vouaux – Yamal-Nenets Autonomous Area, SW coast of Baidaratskaya Bay, E of Ngoyuyakha River mouth, 68°51'N, 66°56'E, on apothecia of *Rinodina* sp. growing on drift-wood, 27.07.2007 (LE 260708).

Note – Known from many regions of Russia, including Yamal-Nenets Autonomous Area (Zhurbenko, 2002b, 2007).

NEOLAMYA PELTIGERAE (Mont.) Theiss. & Syd. – Krasnoyarsk Territory, Evenkiya District, lower Podkamennaya Tunguska River, Central Siberian Biosphere Reserve, lower Birobchana River, Kruten'kii Creek, 62°26'37.3"N, 91°36'32.6"E, on thallus of *Peltigera didactyla*, 19.08.2008 (LE 260890).

Note – The species was formerly known in Krasnoyarsk Territory (Central Siberia) only from Putorana Plateau (Zhurbenko & Hafellner, 1999).

PHACOPSIS CEPHALODIODES (Nyl.) Triebel & Rambold – Murmansk Region, Lapponia Imandrae, Turii Peninsula, 66°33'42.4"N, 34°27'28.8"E, *Picea obovata* forest, on thallus of *Hypogymnia physodes*, 19.08.2009 (LE 260639); Kandalaksha Nature Reserve, Cape Turii, 66°32'24.7"N, 34°30'04.0"E, *Picea obovata* forest, on thallus of *Hypogymnia physodes*, 19.08.2009 (LE 260619). – Perm Territory, Krasnovishersk District, Northern Ural, Visherskii Nature Reserve, near Lyp'ya village, 61°10'30"N, 58°45'50"E, *Betula* forest, on thallus of *Hypogymnia physodes*, 13.07.2006 (LE 260669).
Note – New to Murmansk Region.

PHACOPSIS HUUSKONENII Räsänen – Krasnoyarsk Territory, Evenkiya District, lower Podkamennaya Tunguska River, Central Siberian Biosphere Reserve, near junction of Stolbovaya River and Berezovyi Creek, 62°16'43.4"N, 91°26'12.4"E, *Picea obovata*-*Betula* forest, on thallus of *Bryoria fuscescens*, 16.08.2008 (LE 260679).

Note – The species was formerly known in Krasnoyarsk Territory/ Central Siberia only from Stolby Reserve in the vicinities of Krasnoyarsk (Zhurbenko, 2012).

PHAEOSPOROBULUS ALPINUS R. Sant., Alstrup & D. Hawksw. – Yamal-Nenets Autonomous Area, SW coast of Baidaratskaya Bay, E of Ngoyuyakha River mouth, 68°51'01.1"N, 66°53'03.0"E, tundra, on thallus of *Ochrolechia* sp. growing on mosses, 30.07.2007 (LE 260698b).

Note – Known from many regions of Russia, including Yamal-Nenets Autonomous Area (Zhurbenko, 2002b, 2007).

PHAEOSPOROBULUS USNEAE D. Hawksw. & Hafellner – Central Federal District, Vladimir Region, Gus-Khrustalny District, Meshchera National Park, NW of Kurlovskii, 55°28'08.2"N, 40°34'40.3"E, *Pinus sylvestris* forest, on thallus of *Usnea hirta*, 7.10.2012 (LE 260640). – Krasnoyarsk Territory, Evenkiya District, lower Podkamennaya Tunguska River, Central Siberian Biosphere Reserve, lower Tanimakit River, 62°30'00.4"N, 91°29'50.8"E, on lobes of *Evernia mesomorpha* growing on *Picea*, 18.08.2008 (LE 260789b). – Primorye Territory, Olga District, near Olga, 43°44'44.5"N, 135°16'28.1"E, on thallus of *Ramalina* sp. growing on *Quercus mongolica* bark, 21.09.2007 (LE 260849).

Note – New to Central Federal District and Primorye Territory.

PLECTOCARPON LICHENUM (Sommerf.) D. Hawksw. – Perm Territory, Krasnovishersk District, Northern Ural, Visherskii Nature Reserve, Chuval'skii Kamen' Range, near Kuryksarka River mouth, 60°58'N, 58°52'E, *Picea* forest, on thallus of *Lobaria pulmonaria*, 25.07.2006 (LE 260809).

Note – New to Perm Territory.

PSEUDOPYRENIDIUM TARTARICOLA (Lindsay) Nav.–Ros., Zhurb. et Cl. Roux – Yamal-Nenets Autonomous Area, SW coast of Baidaratskaya Bay, E of Ngoyuyakha River mouth, 68°50'28.4"N, 66°55'59.3"E, tundra, on thallus of *Ochrolechia inaequatula*, 27.07.2007 (LE 260718).

Note – Known from many regions of Russia, including Yamal-Nenets Autonomous Area (Navarro-Rosinés et al., 2010).

RHAGADOSTOMA LICHENICOLA (De Not.) Keissl. – Murmansk Region, Lapponia Imandrae, Khibiny Mountains, 2.5 km SE of Namuaiv Mountain, 67°50'N, 34°09'E, alt. 400–450 m, wet mountain tundra, on thallus of *Solorina crocea*, 08.08.1998 (LE 260759).

Note – Known from many regions of Russia, including Murmansk Region (Zhurbenko, 2001, 2007).

SPHAERELLOTHECIUM MINUTUM Hafellner – Perm Territory, Krasnovishersk District, Northern Ural, Visherskii Nature Reserve, 3 km NE of Isherim Mountain, 61°09'N, 59°10'E, alt. 900 m, mountain tundra, on thallus of *Sphaerophorus globosus*, 20.07.2006 (LE 260709).

Note – New to Perm Territory.

STIGMIDIUM sp. – Krasnoyarsk Territory, Turukhansk District, near Podkamennaya Tunguska River mouth, Central Siberian Biosphere Reserve, right bank of Enisei River in front of N extremity of Komsinskii Island, 61°53'N, 89°20'E, on hymenium of apothecia and rarely thallus of *Mycobilimbia tetramera* growing on dead mosses at *Populus tremula* base, 07.07.2009 (LE 260850).

Description – *Ascomata* 35–60 µm diam., semi-immersed to almost sessile, crowded, often contiguous. *Asci* (22–)26–34(–41) × 11–13(–15) µm (n = 29, in water or BCr). *Ascospores* hyaline, 1-septate, not or rarely slightly constricted at the septum, usually pseudotetrablastic, halo

not observed, smooth or possibly occasionally verruculose when old, (10.0–)10.7–12.1(–12.7) × (3.0–)3.2–3.6(–3.8) µm, 1/b = (2.8–)3.0–3.6(–4.0) (n = 23, in water). Walls of asci and ascospores BCr–, pycnidial gel here and there BCr+ violet. Infected hymenium of the host is bleached or darkened.

Notes – *Stigmidium mycobilimbiae* Cl. Roux, Triebel & Etayo, the only species of the genus formerly reported on *Mycobilimbia*, differs from the examined specimen in its larger ascomata (60–90 × 55–75 µm), BCr+ violet reaction of the ascospore wall and larger ascospores [(10.5–)11.5–16.0(–16.5) × (2.5–)3.0–4.0(–4.5) µm], which are 1(–3)-septate (Roux & Triebel, 1994). This species grows parasymbiotically on the thalli of host lichens.

STIGMIDIUM cf. SQUAMARIAE (de Lesd.) Cl. Roux & Triebel – Central Federal District, Smolensk Region, Demidov District, Smolensk Lakeland National Park, near Evseevka, 55°43'N, 31°52'E, on hymenium of apothecia of *Lecanora polytropa* growing on open boulder, 1.06.2005 (LE 260659).

Notes – *Ascomata* 25–35 µm diam., mostly immersed and erumpent only in ostiolar area, crowded. *Ascospores* hyaline, (7.0–)8.0–9.4(–9.7) × (3.2–)3.5–4.1(–4.4) µm, 1/b = (2.0–)2.1–2.5(–2.8) (n = 34, in BCr), 1-septate, wall smooth, distinct halo not observed, not pseudotetrablastic. Infected host hymenium becomes dark. According to Roux & Triebel (1994, 2005) *S. squamariae* has larger ascomata (60–75 × 40–55 µm) and larger ascospores [(8.5–)9.5–12.5(–14.0) × (4.0–)5.0–5.5(–6.0) µm] with quite visible halo; it has been formerly reported in Central Federal District only from Tver Region (Notov et al., 2011).

TAENIOLELLA BESCHIANA Diederich – Krasnoyarsk Territory, Evenkiya District, lower Podkamennaya Tunguska River, Central Siberian Biosphere Reserve, lower Usas River, 62°12'14.6"N, 91°09'53.7"E, on basal squamules of *Cladonia* sp. growing on soil, 13.07.2009 (LE 260830).

Note – The species was formerly known in Krasnoyarsk Territory only from Taimyr Peninsula (Zhurbenko, 1998; Zhurbenko & Alstrup, 2004).

TONINIA sp. – Central Federal District, Ryasan Region, Spassk District, Okskii Biosphere Reserve, Brykin Bor, 54°42'40"N, 40°51'10"E, broadleaf

forest, on thallus of *Parmelina tiliacea* growing on *Tilia cordata* bark, 4.05.2007 (LE 260719). Description (Fig. 4) – Lichenization not observed. *Ascomata* apothecia, black, glossy, epruinose, rough, (100–)150–350(–500) μm diam., sessile, at first subglobose to turbinate, then cup-shaped or discoid, constricted at the base, disc concave then plane to slightly convex, with a slightly elevated, finally sometimes disappearing margin, dispersed to adjacent. *Proper exciple* annular, prosoplectenchymatic, dark to medium purplish/vinaceous brown, paler in the inner parts, lacking crystals, 25–60 μm thick, in cross section composed of radially arranged cells with ellipsoid to narrowly cylindrical lumina and walls 1.5–3 μm thick, K–, N+ reddish purple or violet (coloration fading). *Hypothecium* hyaline, lacking crystals, up to 100 μm tall, merging with exciple below. *Epithecium* medium to dark bluish green, lacking crystals, 5–10 μm tall,

K–, N+ lilac to violet (coloration disappearing). *Hymenium* hyaline, 40–55 μm tall, I+ red, K/I+ blue with vertical red streaks. *Paraphyses* straight, septate, unbranched, ca. 1.5 μm diam., with swollen, diffusely unevenly bluish green apices (pigments encrust cell walls, which is better seen in K), 2–4(–6) μm diam., not conglutinated. *Asci* subcylindrical to broadly clavate, wall I and K/I–, surrounded by a I+ red, K/I+ blue or occasionally red gelatinous sheath 1–2 μm thick, tholus usually well-developed (clearly seen in somewhat immature asci), up to 12 μm tall, I and K/I+ blue, containing well-developed conical ocular chamber, (39–)43–51(–57) \times (9–)10–12(–13) μm ($n = 34$, in water, I or K/I), 8-spored. *Ascospores* hyaline, bacilliform, rarely spathulate or naviculate, straight or slightly curved, isodiametric or often with somewhat thicker upper part, ends more or less rounded, (15.0–)22.0–38.2(–52.0) \times (1.6–)1.9–2.7(–3.9) μm ,

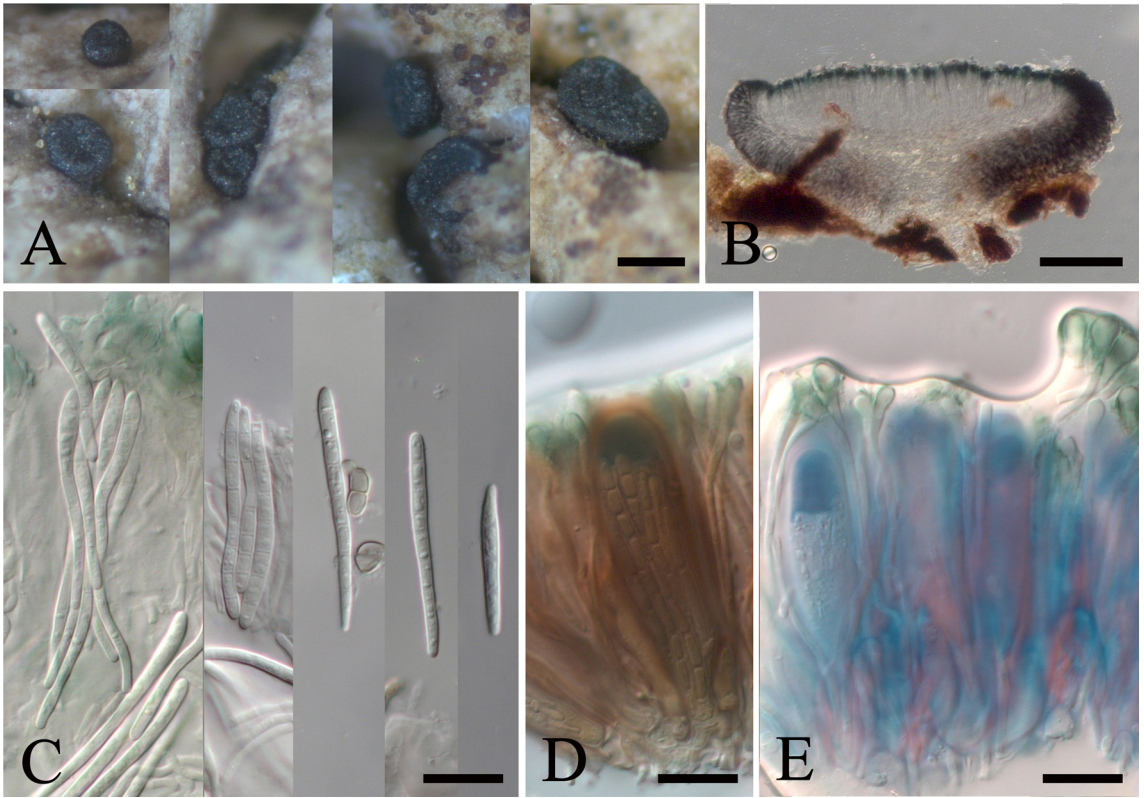


Fig. 4. *Toninia* sp. growing on *Parmelina tiliacea* (LE 260719). A – habitus of apothecia; B – apothecium in cross section (in water); C – ascospores (in K); D – hymenium with asci (in I); E – hymenium with asci (in K/I); Bars: A = 200 μm ; B = 100 μm ; C–E = 10 μm .

l/b = (4.2–)9.3–17.3(–23.5) (n = 87, in water, K, I or K/I), (1–)3–7(–9)-transseptate, not constricted at the septa, guttulate (best seen in K), wall thin, smooth, non-halonate, usually arranged in an ascus in one bunch. *Conidiomata* not observed. Developed on the upper side of *Parmelina tiliacea* lobes, mainly by their margins, sometimes on more or less moribund host parts. Pathogenicity not observed.

Notes – Examined material possibly represents a new lichenicolous species of *Toninia*, but more material is needed to verify this assumption. The other so far known lichenicolous not or weakly lichenized *Toninia* species, viz. *T. collematicola* Timdal (growing on *Collema*), *T. episema* (Nyl.) Timdal (on *Circinaria*), *T. leptogii* Timdal (on *Collema* and *Leptogium*), *T. plumbina* (Anzi) Hafellner & Timdal (mainly on *Degelia*), *T. subdispersa* (Nyl. ex Hasse) K. Knudsen (on *Lecania*), *T. subfuscae* (Arnold) Timdal (on *Caloplaca*, *Lecanora*, *Lecidella*, *Pertusaria* and *Verrucaria*), *T. subtalparum* van den Boom (on *Lecania*), *T. ualae* Etayo (on *Nephroma* and *Pseudocyphellaria*), and *T. verrucariae* (Metzler ex Nyl.) Timdal (mainly on *Bagliettoa* and *Verrucaria*), differ from the studied specimen in their host selection and some taxonomically essential characters (Clauzade et al., 1989; Timdal, 1991; Rambold & Triebel, 1992; Boqueras, 2000; van den Boom, 2004; Spribille et al., 2006; Knudsen & Lendemer, 2007; Etayo & Sancho, 2008; Brackel, 2009). Among these *Toninia ualae*, a recently described from Chile weakly lichenized species with granulose or sometimes indistinct thallus, seems to be most similar to the treated species. However, it clearly differs from the latter in having sometimes white pruinose apothecia, hyaline to gray, K+ proper exciple, dark grey, K+ epithecium with crystals, sometimes branched paraphyses without swollen apical cells, and shorter ascospores [(18–)21–30(–37) × 2–2.5(–3) µm], which are slightly constricted at the septa (Etayo & Sancho 2008: Fig. 119). *Toninia episema*, *T. leptogii*, *T. subdispersa*, *T. subtalparum*, and *T. verrucariae* are easily distinguished from the present species by their simple or 1-septate ascospores. *Toninia collematicola* has pruinose apothecia, dark grey, K+ violet proper exciple, grey, K+ violet epithecium, and 3(–5)-septate ascospores, 26.5–39.5 × 3–4.5 µm. *Toninia plumbina* differs in having dark brown hypothecium and narrowly fusiform to bacilliform, (1–)3(–5)-septate ascospores, 18.5–29 × 3–4.5

µm. *Toninia subfuscae* has reddish brown hypothecium and 1–3-septate, ellipsoid to shortly bacilliform ascospores, 9.5–16 × 4–5.5 µm. Examined material also strongly recalls some *Bacidia* species, particularly *B. bagliettoana* and *B. subincompta*, which mainly differ in being lichenized and in having pigmented hypothecium (Ekman, 2004).

TREMELLA CETRARIICOLA Diederich & Coppins – Murmansk Region, Karelia Keretina, Kandalaksha Nature Reserve, N coast of Velikii Island, 66°35'27.4"N, 33°21'30.0"E, supralittoral, on thallus of *Cetrariella delisei*, 8.07.2008 (LE 260739); same reserve, Kovdskii Peninsula, N of Cape Kupchinnyi, 66°37'36.9"N, 33°18'10.3"E, supralittoral, on thallus of *Cetrariella delisei*, 5.08.2009 (LE 260749). – Krasnoyarsk Territory, Evenkiya District, lower Podkamennaya Tunguska River, Central Siberian Biosphere Reserve, near Stolbovaya River mouth, 62°07'25.0"N, 91°30'40.6"E, *Picea obovata*-*Betula* forest, on upper side of *Tuckermannopsis ciliaris* lobes, 14.08.2008 (LE 260859).

Note – New to Siberia.

TREMELLA EVERNIAE Diederich – Krasnoyarsk Territory, Evenkiya District, lower Podkamennaya Tunguska River, Central Siberian Biosphere Reserve, near junction of Stolbovaya River and Berezovyi Creek, 62°16'43.4"N, 91°26'12.4"E, *Picea obovata*-*Betula* forest, on lobes of *Evernia mesomorpha* growing on *Picea*, 16.08.2008 (LE 260699); same reserve, lower Tanimakit River, 62°30'00.4"N, 91°29'50.8"E, on lobes of *E. mesomorpha* growing on *Picea*, 18.08.2008 (LE 260789a).

Note – Formerly known in Russia only from Stolby Nature Reserve near Krasnoyarsk (Zhurbenko, 2012).

TREMELLA HYPOGYMNAE Diederich & M.S. Christ. – Murmansk Region, Karelia Keretina, Kandalaksha Nature Reserve, Velikii Island, near Kupchinnyi Rapid, 66°36'42.5"N, 33°16'38.6"E, *Pinus sylvestris*-*Betula* forest, on thallus of *Hypogymnia physodes*, 8.08.2009 (LE 260689). – Krasnoyarsk Territory, Evenkiya District, lower Podkamennaya Tunguska River, Central Siberian Biosphere Reserve, lower Tanimakit River, 62°29'30.1"N, 91°30'10.9"E, *Betula* forest, on thallus of *Hypogymnia physodes*, 18.08.2008 (LE 260810).

Note – New to Murmansk Region.

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