

Macromycetes on Ainovy islands (Murmansk region, Russia)

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Abstract

Kalamees, Kuulo and Raitviir, Ain 2006. Macromycetes on Ainovy islands (Murmansk region, Russia). – Meddelelser om Grønland, Bioscience 56, Copenhagen, The Commission for Scientific Research in Greenland, p. 139-147.

The authors present data on 17 species of Helotiales and 19 species of Agaricales and Russulales, collected on the small islands called Ainovy Ostrova in the Barents Sea close to the coast of the Kola Peninsula. Eleven species of Helotiales and five species of Agaricales are reported for the first time from the Russian Arctic.

Keywords: Macromycetes, Helotiales, Agaricales, Russulales, Arctic, Russia.

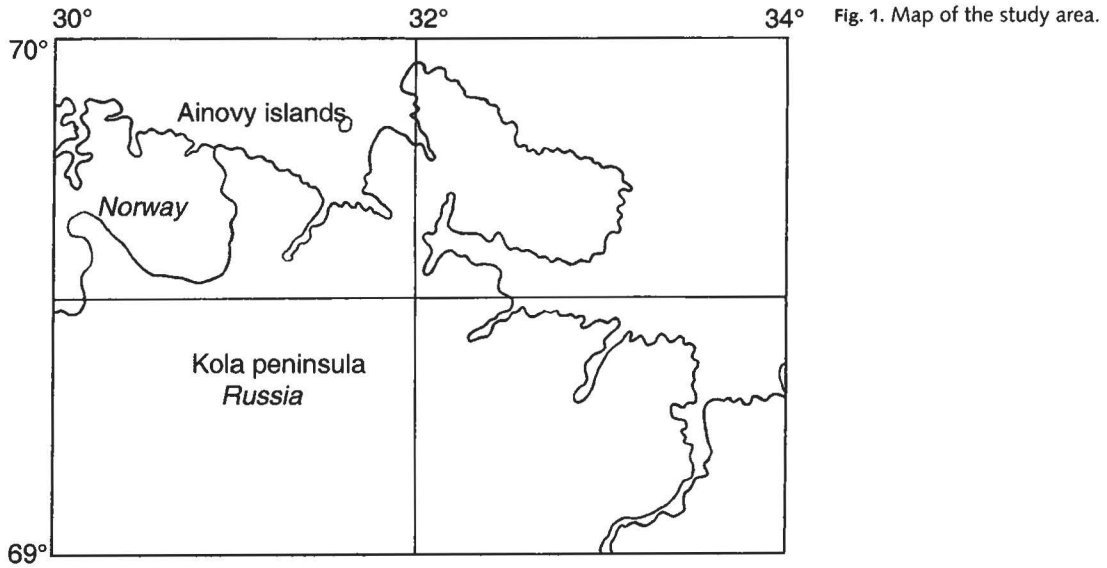
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Introduction

The mycobiota of the Murmansk area of the Russian Arctic which is located in the northern part of Kola peninsula, north of the line from Pechenga village (31 E) to the mouth of Ponoï (42 E) (Lavrenko and Soczava 1956; Karatygin *et al.* 1999) is comparatively poorly known. The only data on the macromycetes of the area were published by Mihhailovski (1974, 1975a, 1975b), who had investigated the tundras of the Hibin Mountains in the Kola peninsula in the early seventies of the last century.

The first author and his collaborators collected basidiomycetes and ascomycetes in this area on small coastal islands called Ainovy Ostrova in Russian and Heinäsaaret in Finnish in August 1977. The authors identified 36 species in total, 16 of them new for the Russian Arctic. There are 17 species of Helotiales and 19 species of Agaricales and Russulales. An annotated list of the collected species is presented in this paper.

The Ainovy islands (Heinäsaaret) comprise two small islands in the Barents Sea, Bolshoi Ainov and Malyi Ainov, located north of Pechenga Bay and west of Rybachij peninsula at 69° 50' N, 31° 35' E (Fig. 1). The total area of the islands is 317 ha and they are composed of upper paleozoic sediment rocks extending 22 m a.s.l. The climate is oceanic with strong winds and a thin and uneven snow cover in winter. The islands are covered by lowland dwarf scrub tundra with small *Sphagnum* fens within it. Empetrum heath (*Empetrum nigrum*, *Chamaepericlymenum suecicum*, *Arctostaphylos alpina*, *Vaccinium myrtillus*, *V. uliginosum*, *V. vitis-idaea*, *Calluna vulgaris*, *Loiseleuria procumbens*, *Dryas punctata*, *Rubus chamaemorus*, *Salix herbacea*) is the dominating type of tundra. In the sparse grass layer *Carex* spp., *Deschampsia flexuosa*, *Equisetum pratense*, *Tofieldia palustris*, *Silene acaulis*, *Rumex* sp., *Saussurea alpina*, *Chamaenerion angustifolium*, *Stellaria* sp. and *Athyrium* sp. are common. In some places willow copses (*Salix lapponicum*, *S. glauca*) or fragments of tall-herb communities (*Filipendula ulmaria*, *Heraclium* spp., *Anthriscus sylvestris*, *Valeriana officinalis*) are present. The coast is formed of low cliffs or denuded terraces of flat rocks bordered with a *Honckenya peploides* – *Ammophila arenaria* belt in the subsaline zone often followed by a tall-herb belt before the tundra.



Material and methods

All specimens were collected by K. Kalamees, Mall Vaasma and Luigi Pihlik from 18 to 21 August 1977 on Bolshoi Ainov island with the exception of two collections from Malyi Ainov island (especially indicated), air dried and preserved in the Mycological Herbarium

of the Institute of Zoology and Botany (TAA). Later the specimens were soaked in 3% or 5% aqueous solution of KOH and examined in a Nikon Labophot 2 or SWIFT M4000-D microscope using 60x dry or 100x oil-immersion lenses. All basidiomycetes were identified by K. Kalamees and ascomycetes by A. Raitviir.

Species account

**Ascomycota
Helotiales, Dermateaceae**

***Diplonaevia seriata* (Lib.) B. Hein**

Description and illustrations: Hein (1983) p. 88, Fig. 1, a-b.

Distribution: Europe.

Host: Dead culms and leaves of grasses.

Specimens: On the coast, on dead leaves of *Ammophila arenaria*, 20 VIII, TAA-84159, TAA-84160.

Notes: New for the Russian Arctic and the first record from the arctic areas.

***Mollisia arundinacea* (Fr.) Phillips**

Fig. 2.

Description: Rehm (1896) p. 541.

Distribution: Europe.

Host: Dead culms and leaves of grasses.

Specimens: On the coast, on dead leaves of *Ammophila arenaria*, 20 VIII, TAA-84161.

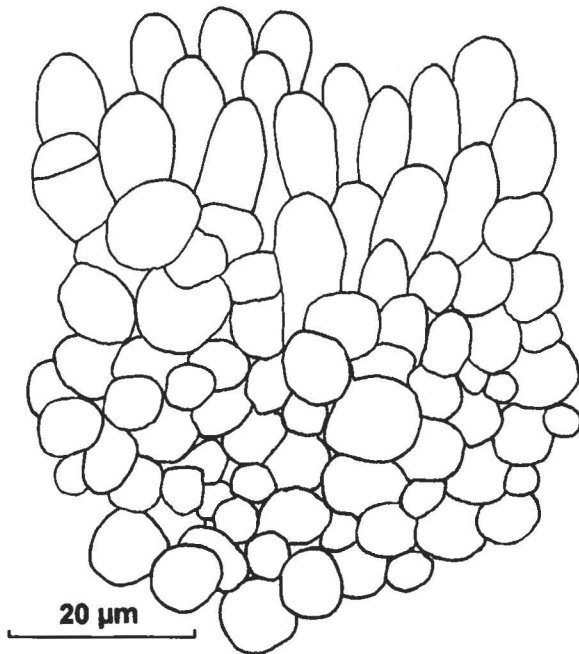


Fig. 2. *Mollisia arundinacea*, ectal excipulum (TAA-84161).

Notes: New for the Russian Arctic. *M. arundinacea* is in its hymenial features very close to the following species but differs clearly from it in colour and structure of the ectal excipulum. The apothecia of *M. arundinacea* are pale whitish gray and externally smooth when fresh, but those of *M. maculans* are greyish brown to dark brown with velvety external surface. The ectal excipulum of *M. arundinacea* is composed of thin-walled (walls up to 0.5 μm thick) rounded cells of very variable size. The cells are pale brown becoming almost hyaline toward the margin. The ectal excipulum terminates at the margin with a few, very thin-walled clavate cells. In *M. maculans* the ectal excipulum is composed of dark brown, thick-walled (walls 0.5-1 μm thick) cells of even size, and it is covered with clavate outgrowths which are dark brown at the flanks and become pale brown at the margin.

***Mollisia maculans* (Rehm) Sacc.**

Fig. 3.

Description: Rehm (1896) p. 546.

Distribution: Europe.

Host: Dead culms and leaves of grasses.

Specimen: On the coast, on dead leaves of *Ammophila arenaria*, 20 VIII, TAA-84160.

Notes: New for the Russian Arctic, this species often grows together with *M. arundinacea* and the differences between them are discussed under the previous species.

***Mollisia revincta* (P. Karst.) Rehm**

Description and illustrations: Breitenbach and Kränzlin (1984) No. 228, 229.

Distribution: Europe.

Host: Dead herbaceous stems.

Specimen: Tundra, on dead stems of *Epilobium angustifolium*, 19 VIII, TAA-84100.

Notes: Karatygin *et al.* (1999) list this species from the Polar Ural area of the Russian Arctic.

***Pirottaea nigrostriata* Graddon**

Description and illustrations: Nannfeldt (1985) p. 19, Figs 5 A-D.

Distribution: Europe.

Hosts: Dead stems of *Heracleum* spp.

Specimen: Tundra, on the base of a dead stem of *Heracleum* sp., 19 VIII, TAA-84113.

Notes: New for the Russian Arctic. It is very probably a

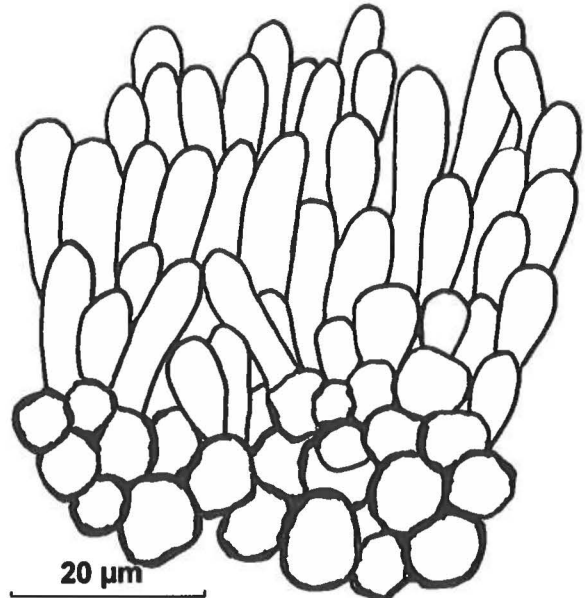


Fig. 3. *Mollisia maculans*, ectal excipulum (TAA-84160).

Heracleum-specific species and should be looked for on this host in arctic and alpine areas.

***Pirottaea senecionis* Nannf.**

Description and illustrations: Nannfeldt (1985) p. 21, Figs 8 E-F, 11A-E.

Distribution: Europe.

Hosts: Dead stems of *Senecio* spp. and other Asteraceae.

Specimen: Tundra, on dead stems of an unidentified Asteraceae gen. sp., 19 VIII, TAA-84118a.

Notes: New for the Russian Arctic.

Helotiales, Helotiaceae

Crocicreas cyathoideum* (Bull. : Fr.) S. E. Carp. var. *cyathoideum

= *Phialea cyathoidea* (Bull.: Fr.) Gill., *Cyathicula cyathoidea* (Bull.: Fr.) Thümen.

Description and illustration: Carpenter (1981) p. 66, Fig. 13.

Distribution: Multiregional, present on all continents, temperate to arctic-alpine (Carpenter 1981).

Hosts: Dead herbaceous stems of a very wide range of plants.

Specimens: Tall-herb community, on dead stems of *Anthriscus sylvestris*, 19 VIII, TAA-84155; on dead stems

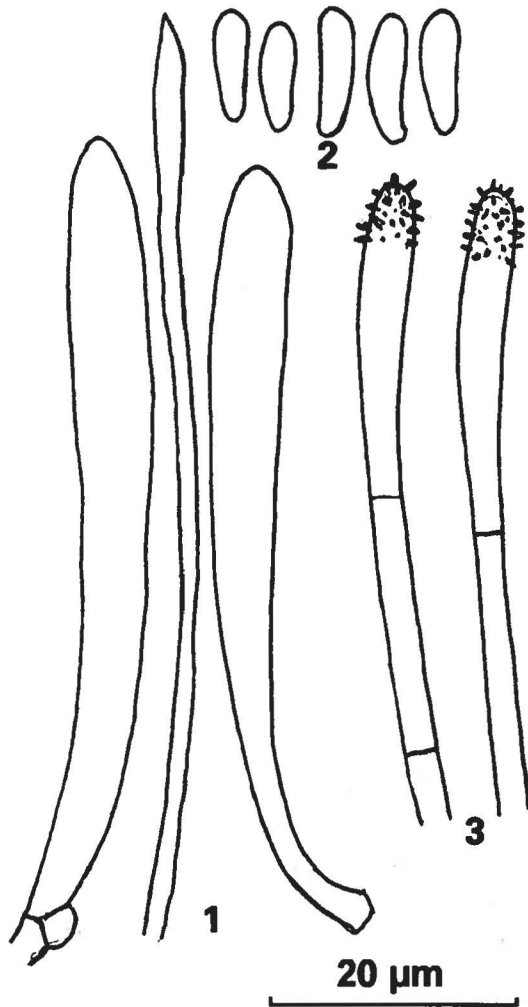


Fig. 4. *Cistella pediformis*. 1. Two asci and a paraphysis. 2. Ascospores. 3. Two hairs (TAA-84111).

of *Geranium* sp., 19 VIII, TAA-84149; on dead stems of *Heracleum* sp., 20 VIII, TAA-84167, 84171; tundra, on unidentified herbaceous stems, 19 VIII, TAA-84127.

Notes: Common in Russian Arctic from Murmansk area to Taimyr but not reported from areas east of Taimyr (Karatygin *et al.* 1999).

***Crocicreas spicarium* (Rehm) S. E. Carp.**

= *Cyathicula spicarium* (Rehm) E. Müller

Description and illustrations: Carpenter (1981) p. 66, Fig. 44, Dennis (1956) Fig. 24.

Distribution: Europe, Greenland, arctic-alpine.

Host: Dead culms and leaves of grasses.

Specimen: On the coast, on dead culms of *Ammophila arenaria*, 20 VIII, TAA-84159

Notes: New for the Russian Arctic.

***Hymenoscyphus vitellinus* (Rehm) Kunze**

Description: Dennis (1978) p. 136.

Distribution: Europe.

Host: Dead herbaceous stems.

Specimens: Tundra, on dead stems of *Rumex* sp., 19 VIII, TAA-84125; on dead stems of *Epilobium angustifolium*, 20 VIII, TAA-84181.

Notes: New for the Russian Arctic.

***Symphosirinia angelicae* E. A. Ellis**

Description and illustrations: Baral (1994) p. 217, Figs 53-64.

Distribution: Europe.

Host: Seeds of *Angelica sylvestris* and *Anthriscus sylvestris*.

Specimen: Tall-herb community, on fallen seeds of *Anthriscus sylvestris*, 19 VIII, TAA-84146.

Notes: In this collection the species is present only in its anamorph state. *Anthriscus* is a new host genus for this species, but our specimen agrees in all details with material growing on *Angelica*. New for the Russian Arctic.

Helotiales, Hyaloscyphaceae

***Cistella grevillei* (Berk.) Raschle**

Description and illustrations: Raitviir (2004) p. 32, Fig. 14A.

Distribution: Europe, Asia, North America.

Host: Dead stems of various herbaceous plants.

Specimens: Tundra, on a stem of *Heracleum* sp., 19 VIII, TAA-84112; tall-herb community, on a dead stem of *Anthriscus sylvestris*, TAA-84153; tundra, on dead stems of *Epilobium angustifolium*, 20 VIII, TAA-84180.

Notes: Raschle (1978) has introduced a wide concept of *C. grevillei* later followed by Huhtinen (1985). The present authors, however, follows a narrow concept of species in *Cistella* (Raitviir 1970, 1978, 2004) and the studied material belongs clearly to *C. grevillei* s. str. in its ascus and spore size. Karatygin *et al.* (1999) list it from the Tyumen' area of the Russian Arctic.

***Cistella pediformis* Raitv.**

Fig. 4.

Description and illustrations: Raitviir (1981) Fig. 5, Raitviir (2004) Fig. 16A.

Distribution: Europe, Asia.

Host: Dead stems of various herbaceous plants.

Specimen: Tundra, on a dead stem of *Heracleum* sp., 19 VIII, TAA-84111.

Notes: The distribution of this rare arctic-alpine species has been discussed by Raitviir (1985).

***Hyalopeziza latispora* Raitv.**

Description and illustrations: Raitviir and Huhtinen (1997) p. 454, Figs 7-12.

Distribution: Europe, Middle Asia, Greenland.

Host: Dead stems of various herbaceous plants.

Specimen: Tundra, on a dead stem of *Heracleum* sp., 19 VIII, TAA-84112.

Notes: New for the Russian Arctic. It is a species with very characteristic arctic-alpine distribution.

***Lachnum papyraceum* (P. Karst.) P. Karst.**

Description: Apothecia scattered to gregarious, stipitate. Disc 0.5-1 mm in diameter, pure white when fresh, remaining white when dry. Receptacle deeply cupulate to cupulate, whitish when fresh and dry, covered, particularly at the margin, with white straight hairs. Stipe cylindrical, long, slender, equalling in length to the diameter of disc, concolorous with the receptacle. Ectal excipulum of hyaline, thin-walled prismatic cells, 8-12 x 5-8 µm. Hairs cylindrical, apically slightly clavate to capitate, hyaline, thin-walled, all over finely warted, 40-80 x 3-4 µm long, 2-3-septate, not bearing crystals. Asci arising from croziers, cylindrical-clavate, 8-spored, 35-45 x 3-4 µm, apical pore blue in MLZ. Spores fusoid, sometimes slightly inequilateral, hyaline, aseptate, eguttulate, 4-7 x 1-1.2 µm. Paraphyses narrowly lanceolate, aseptate, exceeding the asci by up to 10 µm, 1.5-2.5 µm wide.

Illustration: Dennis (1949) Fig. 5.

Distribution: Europe, Asia.

Host: Decaying deciduous and coniferous wood.

Specimen: Willow copse, on a dead branch of *Salix* sp., 20 VIII, TAA-84187.

Notes: This species has not been treated in detail recently and for this reason a detailed description is provided. New for the Russian Arctic.

***Lachnum tenuissimum* (Quél.) Raitv.**

Description: Breitenbach and Kränzlin (1984) p. 194, 195 as *Dasyscyphus tenuissimus* (Quél.) Sacc.).

Distribution: Europe, Asia.

Host: Dead culms and leaves of various grasses.

Specimen: Tall-herb community, on dead culms of *Ammophila arenaria*, 20 VIII, TAA-84168.

Notes: A very common and widely distributed graminicolous species. Karatygin *et al.* (1999) list it from the Polar Ural area of the Russian Arctic.

***Phialina lachnibrachya* (Desm.) Raitv.**

Description and illustrations: Huhtinen (1990) p. 211, Figs 230-235, Raitviir (2004) p. 95, Fig. 45B.

Distribution: Europe, Asia, North America, North Africa.

Host: Fallen leaves of various deciduous trees.

Specimens: Tundras, willow copse, on fallen leaves of *Salix* sp., 20 VIII, TAA-84185.

Notes: This species has a wide distribution and an ecological range from Mediterranean to high Arctic. Karatygin *et al.* (1999) list it from the Taimyr area of the Russian Arctic.

Helotiales, Sclerotiniaceae

***Moellerodiscus tenuistipes* (J. Schröt.) Dumont**

Description and illustration: Dumont (1976) p. 260, Fig. 10.

Distribution: Europe.

Hosts: *Castanea sativa*, *Epilobium angustifolium*, *Filipendula ulmaria*, *Potentilla palustris*, *Rubus fruticosus*.

Specimen: Tundra, on dead stems of *Epilobium angustifolium*, 20 VIII, TAA-84180.

Notes: New for the Russian Arctic.

Basidiomycota

Agaricales, Bolbitiaceae

***Bolbitius vitellinus* (Pers.: Fr.) Fr.**

Description and illustrations: Breitenbach and Kränzlin (1995) No. 296, 297.

Distribution: Eurasia, Iceland, Greenland, North America, Africa (Hansen and Knudsen 1992; Breitenbach and Kränzlin 1995; Borgen *et al.* 2006).

Substrate: Dung, humus, vegetable debris.

Specimen: Tall-herb community, on vegetable debris, 20 VIII, TA-84206.

Notes: New for the Russian Arctic.

***Panaeolus fimicola* (Fr.: Fr.) Qué.**

Description and illustrations: Breitenbach and Kränzlin (1995) No. 256, 257.

Distribution: Eurasia, Iceland, Africa (Hansen and Knudsen 1992; Breitenbach and Kränzlin 1995).

Substrate: Vegetable debris, dung.

Specimen: Tall-herb community, on dung, 21 VIII, TAA-84229.

Notes: New for the Russian Arctic.

Agaricales, Cortinariaceae

***Cortinarius alpinus* Boud.**

(= *C. favrei* D. M. Hend.)

Description and illustrations: Gulden *et al.* (1985) p. 33, 34.

Distribution: Eurasia, Iceland, Greenland, Scotland, Svalbard, New Siberian Islands, the Novaya Zemlya, North America; arctic-alpine (Gulden *et al.* 1985; Hansen and Knudsen 1992; Karatygin *et al.* 1999; Borgen *et al.* 2006).

Substrate: Soil, mycorrhizal with dwarf willows.

Specimen: In willow copse, 20 VIII, TAA 84200.

Notes: Widely distributed in Russian Arctic (Karatygin *et al.* 1999).

***Galerina calyptrata* P. D. Orton**

Description and illustrations: Smith and Singer (1964) p. 59, 65, Fig. 26.

Distribution: Eurasia, Svalbard, Iceland, Scotland, North America (Smith and Singer 1964; Watling and Gregory 1993; Karatygin *et al.* 1999).

Substrate: Moss.

Specimens: Bolshoi Ainov: Tundra, in moss, 19 VIII, TAA-84110, 84137. Malyi Ainov: on spring slope below the cliff, in moss, 21 VIII, TAA-84212; tundra, in moss, 21 VIII, TAA- 84214, 84221. – Extremely common in *Empetrum*-tundra in mosses on both islands.

Notes: New for Murmansk area. Karatygin *et al.* (1999) list it only from the Chukotka area of the Russian Arctic. Nezdoininogo (1996) treats it as a synonym of *G. evelata* (Singer) A.H. Sm. and Singer and indicates a much wider distribution in the Russian Arctic, including the Murmansk area.

***Hebeloma monticola* Vesterh.**

Description and illustrations: Vesterholt (1989) p. 312, 313, Figs 24, 25.

Distribution: Europe, Greenland (Vesterholt 1989; Borgen *et al.* 2006).

Substrate: Soil, mycorrhizal.

Specimen: In willow copse, 20 VIII, TAA-84189. – Very common in willow copses.

Notes: New for the Russian Arctic.

Agaricales, Strophariaceae

***Hypholoma elongatum* (Pers.: Fr.) Ricken**

(= *H. elongatipes* Peck; *Psilocybe elongata* (Pers.: Fr.) J. Lange)

Description and illustration: Bas *et al.* (1999) p. 73, Fig. 51.

Distribution: Eurasia, Greenland, Iceland, Svalbard, North America (Hansen and Knudsen 1992; Bas *et al.* 1999; Karatygin *et al.* 1999; Borgen *et al.* 2006).

Substrate: Moss (*Polytrichum* spp., *Sphagnum* spp.).

Specimens: In bogs, 19 VIII, TAA-84122, 84123. – Very common in fens in *Sphagnum* spp.

Notes: New for the Murmansk area. Karatygin *et al.* (1999) list it from the Tyumen area and Chukotka area of the Russian Arctic.

***Hypholoma laeticolor* (F. H. Møller) P. D. Orton**

(= *Psilocybe laeticolor* (F. H. Møller) Noordel.

Description: Bas *et al.* (1999) p. 74, Fig. 52.

Distribution: Eurasia, Faroe Islands, Scotland, New Siberian Islands (Watling and Gregory 1987; Bas *et al.* 1999; Karatygin *et al.* 1999).

Substrate: Moss.

Specimens: Malyi Ainov: on spring slope below the cliff, in moss, 21 VIII, TAA-84213.

Notes: New for Murmansk area.

Agaricales, Tricholomataceae

***Clitocybe clavipes* (Pers.: Fr.) P. Kumm.**

Description and illustrations: Breitenbach and Kränzlin (1991) No. 152, 153.

Distribution: Eurasia, Greenland, Iceland, North America (Breitenbach and Kränzlin 1991; Hansen and

Knudsen 1992; Karatygin *et al.* 1999; Borgen *et al.* 2006).

Substrate: Vegetable litter.

Specimen: Tundra, 19 VIII, TAA-84140.

Notes: Karatygin *et al.* (1999) list it from Murmansk, Polar Ural and Tyumen areas of the Russian Arctic.

***Cystoderma carcharias* (Pers.) Fayod**

Description and illustrations: Wasser (1993) p. 18, Fig. 1, 4, Fig. 9, c.

Distribution: Eurasia, North America (Wasser 1993).

Substrate: Vegetable litter.

Specimen: Tundra, on fern remnants, 19 VIII, TAA-84136.

Notes: The species is common in boreal and temperate zones of Eurasia growing on acid forest litter. Its occurrence on fern litter is notable. New for Murmansk area. Wasser (1993) lists this species from the Taimyr area of the Russian Arctic.

***Laccaria montana* Singer**

Description and illustrations: Møller (1945) p. 269, 270.

Distribution: Eurasia, Iceland, Greenland; arctic-alpine (Hansen and Knudsen 1992; Karatygin *et al.* 1999; Borgen *et al.* 2006).

Substrate: Soil, mycorrhizal.

Specimen: Willow copse, 19 VIII, TAA-84154a. – Common in willow copses.

Notes: New for Murmansk area. Karatygin *et al.* (1999) list it from Yakutya area of Russian Arctic.

***Mycena citrinomarginata* Gillet**

Description and illustrations: Gulden and Jenssen (1988) p. 37, 38.

Distribution: Eurasia, Faroe Islands, Iceland, Greenland, Svalbard, Africa, North America (Gulden and Jenssen 1988; Maas Geesteranus 1992b; Borgen *et al.* 2006).

Substrate: Vegetable debris and mosses.

Specimen: Tundra, in moss, 19 VIII, TAA-84128.

Notes: The cheilocystidia of this species are described as highly variable: clavate, fusiform, utriform; either smooth, branched or with fingerlike prolongations (Smith 1971, Maas Geesteranus 1992b), but only simple lageniform ones were seen in our material. New for the Russian Arctic.

***Mycena filopes* (Bull.: Fr.) P. Kumm.**

Description and illustrations: Maas Geesteranus (1992b) p. 62, 63, Figs 60-83).

Distribution: Eurasia, Iceland, Greenland, Svalbard, North America (Maas Geesteranus 1992b; Hansen and Knudsen 1992; Karatygin *et al.* 1999; Borgen *et al.* 2006).

Substrate: Vegetable debris, decaying wood.

Specimens: Tundra, in *Empetrum*-cover, 19 VIII, TAA-84094; in willow copse, 20.VIII, TAA-84192, 84204. – Very common in *Empetrum*-tundra and in willow copses.

Notes: New for the Murmansk area. Karatygin *et al.* (1999) list it for Tyumen area of the Russian Arctic.

***Mycena leptcephala* (Pers.: Fr.) Gillet**

Description and illustrations: Maas Geesteranus (1992b) p. 256-158, Figs 187-207, Phillips (1981) p. 73.

Distribution: Europe, Iceland, Greenland, North America (Maas Geesteranus 1992b; Borgen *et al.* 2006).

Substrate: Vegetable debris.

Specimens: Tundra, on fern remnants, 19 VIII, TAA-84129, 84141; on the coast, on driftwood, 20 VIII, TAA-84164. – Common in *Empetrum*-tundra.

Notes: New for Murmansk area. Karatygin *et al.* (1999) list it for the Polar Ural area of the Russian Arctic.

***Mycena metata* (Fr.: Fr.) P. Kumm.**

Description and illustrations: Maas Geesteranus (1992b) p. 68, 69, Figs 100-114.

Distribution: Europe, Greenland, North America (Maas Geesteranus 1992b, Borgen *et al.* 2006).

Substrate: Vegetable debris, decaying wood.

Specimens: Tundra, in *Empetrum*-cover, 19 VIII, TAA-84130; on the coast among grasses, 21 VIII, TAA-84208.

Notes: New for Murmansk area. Karatygin *et al.* (1999) list it for Polar Ural area of Russian Arctic.

***Mycena pura* (Pers.: Fr.) P. Kumm.**

Description: Cap whitish-yellow when dry, with a broad umbo, radially fissured, up to 4 cm across. Gills whitish, very broad (up to 1 cm), widely spaced, anastomosing, the sides strongly veined, emarginated, with a decurrent tooth. Stem yellowish greyish-brown, to 6 x 0.5 cm. Smell and taste radishy, mild. All basidioma with ochraceous spots with age. Cheilo- and pleurocystidia bottle-shaped, 40-70 x 10-25 µm. Spores ellipsoid, amyloid, 6.5-8.7 x 3.4-4.9 µm.

Substrate: Vegetable litter.

Specimens: Tundra, in *Empetrum*-cover, 19 VIII, TAA-84095, 84139.

Notes: Maas Geesteranus (1992b: 416) accepts a number of forms of *Mycena pura*, but our specimens, which are characterized by totally yellowish colour and ochraceous spots, does not fit any of them. It represents probably a new form but more material should be studied before proposing a new form with a formal diagnosis.

***Mycena simia* Kühner**

(=*M. epipterygia* var. *badiceps* M. Lange)

Description: Maas Geesteranus (1992a) p. 31.

Distribution: Europe, Greenland, Iceland (Hansen and Knudsen 1992; Maas Geesteranus 1992a; Borgen *et al.* 2006).

Substrate: Vegetable debris.

Specimen: Tundra, *Empetrum*-cover, 19.VIII, TA-84096; very common.

Notes: The spores are very large in our material: 11.6-15 x 5.8-9.1 µm. Cheilocystidia are very difficult to observe, they are mostly broken and the remnants of their finger-like prolongations are seen as shattered chips in the mount. New for Murmansk area. Karatygin *et al.* (1999) list it from Polar Ural area of Russian Arctic.

***Rickenella swartzii* (Fr.) Kuyper**

(= *R. setipes* s. auct. eur.)

Description and illustrations: Breitenbach and Kränzlin (1991) No. 316, 317.

Distribution: Europe, Iceland, Africa (Malençon and Bertault 1975; Hansen and Knudsen 1992).

Substrate: Moss.

Specimen: Willow copse, on moss on a dead willow branch, 20 VIII, TAA-84198.

Notes: New for the Russian Arctic.

Russulales, Russulaceae

***Russula laccata* Huijsman**

(Syn.: *Russula norvegica* D. A. Reid)

Description and illustrations: Gulden *et al.* (1985) p. 49, 50.

Distribution: Eurasia, Iceland, Svalbard, Greenland,

New Siberian Islands; arctic-alpine (Gulden *et al.* 1985; Karatygin *et al.* 1999; Borgen *et al.* 2006).

Substrate: Soil, mycorrhizal with *Salix* spp. and *Polygonum viviparum*.

Specimen: In willow copse, 20 VIII, TAA-84194.

Notes: New for Murmansk area. Widely distributed in Russian Arctic (Karatygin *et al.* 1999).

***Russula subrubens* (J. E. Lange) Bon**

(Syn.: *R. chamiteae* Kühner)

Description and illustrations: Gulden *et al.* (1985) p. 45, 46.

Distribution: Eurasia, Greenland; arctic-alpine (Gulden *et al.* 1985; Karatygin *et al.* 1999; Borgen *et al.* 2006).

Substrate: Soil, mycorrhizal with *Salix* spp.

Specimen: In willow copse, 20 VIII, TAA-84188. – Very common in willow copses.

Notes: New for Murmansk area. – Karatygin *et al.* (1999) list it from the Chukotka area of the Russian Arctic.

Acknowledgements

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References

Baral, H.-O. 1994. Über *Drepanopeziza verrucispora* und *Symphyosirinia clematidis* (Leotiales, Ascomycetes), mit einem Bestimmungsschlüssel der *Symphyosirinia*-Arten. – *Zeitschrift für Mykologie* 60: 211-224.

Bas, C., Kuyper, Th. W., Noordeloos, M. E. and Vellinga, E. C. 1999. *Flora agaricina Neerlandica* 4. – A.A. Balkema, Rotterdam: 191 pp.

Borgen, T., Elborne, S. A. and Knudsen, H. 2006. A checklist of the Greenland basidiomycetes. – *Meddelelser om Grønland, Bioscience* 56.

Breitenbach, J. and Kränzlin, F. 1984. *Fungi of Switzerland* 1. Ascomycetes. – Luzern: 310 pp.

Breitenbach, J. and Kränzlin, F. 1991. *Pilze der Schweiz* 3. Röhrlinge und Blätterpilze 1 Teil. – Verlag Mykologia, Luzern: 364 pp.

- Breitenbach, J. and Kränzlin, F. 1995. *Pilze der Schweiz* 4. Blätterpilze. 2. Teil. – Verlag Mykologia, Luzern: 371 pp.
- Carpenter, S. E. 1981. Monograph of *Crocicreas* (Ascomycetes, Helotiales, Leotiaceae). – *Memoirs of the New York Botanical Garden* 33: 1-290.
- Dennis, R. W. G. 1949. A revision of the British Hyaloscyphaceae with notes on related European species. – *Mycological Papers* 32: 1-97.
- Dennis, R. W. G. 1956. A revision of the British Helotiaceae in the Herbarium of the Royal Botanical Gardens, Kew, with notes on related European species. – *Mycological Papers* 62: 1-216.
- Dennis, R. W. G. 1978. *British Ascomycetes*. – J. Cramer, Vaduz: 584 pp.
- Dumont, K. P. 1976. Sclerotiniaceae XI. On *Moellerodiscus* (= *Ciboriopsis*). – *Mycologia* 68: 233-267.
- Gulden, G., Jenssen, K. M. 1988. *Arctic and alpine fungi* 2. – Soppkonsulenten, Oslo: 58 pp.
- Gulden, G., Jenssen, K. M., Stordal, J. 1985. *Arctic and alpine fungi* 1. – Soppkonsulenten, Oslo: 61 pp.
- Hansen, L. and Knudsen, H. 1992. *Nordic macromycetes* 2. – Nordsvamp, Copenhagen: 474 pp.
- Hein, B. 1983. Ein erweitertes Konzept für die Ascomyceten-gattung *Diplonaevia* Sacc. (= *Merostictis* Clem. p.p.). – *Sydowia* 36: 78-104.
- Huhtinen, S. 1985. Mycoflora of Poste-de-la-Baleine, Northern Quebec. Ascomycetes. – *Naturaliste canadienne* (Rev. Écol. Syst.) 112: 473-524.
- Huhtinen, S. 1990. A monograph of *Hyaloscypha* and allied genera. – *Karstenia* 29: 45-252.
- Karatygin, I. V., Nezdoiminogo, E. L., Novozhilov, Yu. K. and Zhurbenko, M. P. 1999. *Russian Arctic Fungi. Check-list*. – Izdvo Sankt-Peterburgskoj gosudarstvennoj himiko-farmatsevticheskoi akademii, St. Petersburg: 212 pp.
- Lavrenko, E. M. and Soczava, V. B. 1956. Descriptio vegetati-onis URSS ad "URSS Tabulam Geobotanicam" m. 1: 4 000 000. Annotationes. – Editio Academiae Scientiarum URSS, Mosqua-Leningrad.
- Maas Geesteranus, R. A. 1992a. *Mycenas* of the Northern Hemisphere. 1. Studies in *Mycenas* and other papers. – *Koninklijke Nederlandse Akademie van Wetenschappen Verhandlingen, Afd. Natuurkunde, Tweede Reeks* 90: 1-391.
- Maas Geesteranus, R. A. 1992b. *Mycenas* of the Northern Hemisphere. 2. Conspectus of the *Mycenas* of the Northern Hemisphere. – *Koninklijke Nederlandse Akademie van Wetenschappen Verhandlingen, Afd. Natuurkunde, Tweede Reeks* 90: 1-493.
- Malençon, G. and Bertault, R. 1975. *Flore des champignons supérieurs du Maroc* 2. – Rabat: 540 pp.
- Mikhailovski, L. V. 1974. *Laccaria chibinensis* L. Mikhail. sp. nov. from the Kola peninsula. – *Mikologija i Fitopatologija* 8: 523-524.
- Mikhailovski, L. V. 1975a. Macromycetes of the heathery tun-dra in the valleys of the lakes Great and Small Vudyarvs in the Khibin Mountains. – *Mikologija i Fitopatologija* 9: 293-298.
- Mikhailovski, L. V. 1975b. Fungi Agaricales e montibus Chibiny pro mycoflora URSS novi. – *Novitates systematicae plantarum non vascularum* 12: 205-212.
- Møller, F. H. 1945. *Fungi of the Faerøes 1. Basidiomycetes*. – Copenhagen: 295 pp.
- Nannfeldt, J. A. 1985. *Pirottaea* (Discomycetes inoperculati), a critical review. – *Acta Universitatis Upsaliensis, Symbolae Botanicae Upsalienses* 25 (1): 1-42.
- Nezdoiminogo, E. I. 1996. *Definitorium fungorum Rossiae. Ordo Agaricales 1. Familia Cortinariaceae*. – Nauka, Petropoli: 408 pp.
- Phillips, R. 1981. *Mushrooms and other fungi of Great Britain & Europe*. – Pan Books, London: 288 pp.
- Raitviir, A. 1970. Synopsis of the Hyaloscyphaceae. – *Scripta Mycologica* 1: 1-116.
- Raitviir, A. 1978. K sistematiike roda *Cistella* i blizkikh k nemu taksonov [On the taxonomy of *Cistella* and related taxa]. – *Scripta Mycologica* 8: 147-159.
- Raitviir, A. 1981. New species of the Hyaloscyphaceae from Middle Asia. – *Folia Cryptogamarum Estonica* 12: 1-8.
- Raitviir, A. 1985. The arcto-alpine species of Hyaloscyphaceae. – *Agarica* 12: 137-146.
- Raitviir, A. 2004. Revised synopsis of the Hyaloscyphaceae. – *Scripta Mycologica* 20: 1-132.
- Raitviir, A. and Huhtinen, S. 1997. Glassy-haired Hyaloscyphaceae: New taxa and new synonymies. – *Mycotaxon* 62: 445-460.
- Raschle, P. 1978. Neufunde und Neukombinationen von Hyaloscyphaceae Nannfeldt, (Helotiales). – *Nova Hedwigia* 30: 653-672.
- Rehm, H. 1896. Ascomyceten. Hysteriaceen und Discomycetes. – *Rabenhorst Kryptogamen-Flora* 1(3): 1-1275.
- Smith, A. H. 1971. North American species of *Mycena*. Authorized reprint 1971. – *Bibliotheca Mycologica* 31: 1-521.
- Smith, A. H. and Singer, R. 1964. *A monograph on the genus Galerina Earle*. – New York & London: 384 pp.
- Vesterholt, J. 1989. A revision of *Hebeloma* sect. *Indusiata* in the Nordic countries. – *Nordic Journal of Botany* 9: 289-319.
- Wasser, S. P. 1993. Tribes Cystodermateae Sing. and Leucocoprineae Sing. of CIS and Baltic States. – *Libri Botanici* 9: 1-105.
- Watling, R. and Gregory, N. M. 1987. *British fungus flora. Agarics and boleti 5. Strophariaceae and Coprinaceae p.p.* – Her Majesty's Stationery Office, Edinburgh: 121 pp.
- Watling, R. and Gregory, N. M. 1993. *British fungus flora. Agarics and boleti 7. Cortinariaceae p.p.* – Edinburgh: 131 pp.