

# Lichens and lichenicolous fungi from the Kolyma delta region, Russian Arctic

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105 lichen taxa and 10 lichenicolous fungi are reported from the Kolyma delta region of the Russian Arctic. The lichenicolous fungi *Corticifraga fuckelii*, *Homostegia piggotii* and *Phaeopyxis punctum* are new to the Russian Arctic, another 7 fungi and 56 lichens are new to the Yana-Kolyma floristic subprovince of the Arctic.

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In August 2002 D. A. Walker, N. V. Matveeva, and M. K. Reynolds studied the vegetation near the mouth of the Kolyma River, located in north-east Yakutiya, Russia (Figure 1). The area falls in the Yana-Kolyma floristic subprovince of the Arctic (Yurtsev et al. 1978). Totally 24 releves were chosen to characterize the placor vegetation of the area using the Braun-Blanquet approach (Westhoff & Van der Maarel 1973). A few non-placor areas were also examined. Lichens and associated fungi from these collections were identified by M. P. Zhurbenko by means of standard microscopic techniques. Voucher specimens are preserved in herbarium LE. According to the relevant literature (Andreev 1983, 1984; Andreev et al. 1996; Andrejev & Perfiljeva 1980; Egorova et al. 1991; Lokinskaya 1970; Oxner 1939, 1940a, b, c; Perfiljeva & Rykova 1975; Rykova 1978), 53 of 107 lichen species and all lichenicolous fungi are reported hereby as new

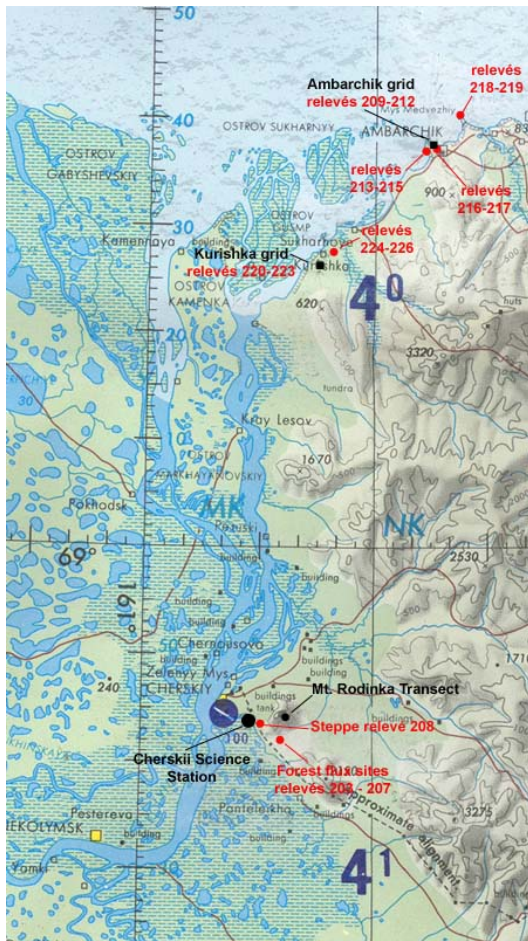
to the Yana-Kolyma area, including three fungi species new to the Russian Arctic.

## Collecting localities

**Cherskii and Mt. Rodinka** – releves 203–208; 68°42–45'N, 161°25–34'E; *Larix cajanderi* stands in various stages of fire succession; steppe grassland on a south facing river bluff; dry prostrate-shrub, lichen tundra.

**Ambarchik and Mys Medvezhiy** – releves 209–219; 69°37–41'N, 162°14–22'E; moist sedge-shrub tundra with frost boils; tussock tundra.

**Kurishka and Sukharnoe** – releves 220–226; 67°27–29'N, 161°45–49'E; moist sedge-shrub tundra with frost boils.



**Figure 1.** Map of collecting localities in the Kolyma River delta region.

### Habitat types

- BC – bare center of frostboils
- FB – frost boil area
- GB – gravel beach above high tide line
- IF – inter-frost boil area
- MT – mounds in tussock tundra
- OF – old, sparse *Larix cajanderi* forest
- SB – steppe bluff community
- SL – dry prostrate shrub-lichen tundra
- ST – moist low shrub-moss tundra
- TM – thick moss community on edges of frost boils
- TT – moist tussock tundra
- WM – wet moss tundra
- YF – young, dense *Larix cajanderi* forest

### Annotated list of taxa

Annotations for the list of taxa include habitat types, localities/releve numbers, substrates, and occasional notes. Species that are new to the Russian Arctic are marked with “#”, those new to the Yana-Kolyma area are marked with “\*”. Authors are cited only for taxa not included in Santesson et al. (2004).

### Lichens

*Alectoria nigricans* – BC, FB, IF, MT, SL, TT; 210, 213, 214, 216, 217, 220–222, 225; on soil.

*Alectoria ochroleuca* – FB, SL; 210; on soil.

*Arctocetraria andrejevii* – GB; Ambarchik; on soil and pebble.

\**Arctocetraria nigricascens* (Nyl.) Kärnefelt & A.Thell – GB; Ambarchik; on soil and pebble.

\**Arctomia delicatula* – IF, FB; 221, 222, 226; on soil.

\**Arthrorhaphis vacillans* – BC; 209, 213, 220; on sand.

*Asahinea chrysantha* – SL; Mt. Rodinka; on soil.

\**Baeomyces carneus* – BC; 220; on sandy soil.

\**Baeomyces rufus* – BC; 213; on sandy soil.

*Bryocaulon divergens* – BC, FB, IF, MT, SL, TT; 209, 210, 213, 214, 216, 217, 220, 221, 225; on soil.

*Bryoria nitidula* – FB, SL; Mt. Rodinka, 221, 225; on soil.

*Buellia insignis* – BC, FB, IF, ST; 205, 213, 220–222, 224–226; on soil.

*Caloplaca ammiospila* – BC, FB, IF, ST; 205, 224; on soil.

*Caloplaca cerina* – BC, FB, SB; 208, 210, 224; on plant remnants.

\**Caloplaca jungermanniae* – ST; 205; on soil.

\**Caloplaca sinapisperma* – FB; 205; on mineral soil.

*Caloplaca tetraspora* – FB, ST; 205; on soil.

\**Caloplaca tirolensis* – FB, IF; 221, 222, 225, 226; on plant remnants.

- Cetraria islandica* ssp. *islandica* – BC, FB, IF, MT, SL, TM, TT, WM; Mt. Rodinka, 209–218, 220–222, 225, 226; on soil.
- Cetraria islandica* ssp. *crispiformis* – FB, IF, ST, TM; 205, 210, 211, 215; on soil.
- Cetraria laevigata* – FB, ST; 205, 214; on soil.
- \**Cetraria muricata* – SB; 208; on soil.
- Cetrariella delisei* – GB; Ambarchik; on soil and pebble.
- Cetrariella fastigiata* – GB; Ambarchik; on soil and pebble.
- \**Cladonia alaskana* A.Evans – FB, IF; 210, 221, 222, 225, 226; on soil.
- Cladonia amaurocraea* – FB, IF, MT, OF, TM, TT, WM; 204, 210–212, 214–217, 222, 225; on soil.
- Cladonia arbuscula* ssp. *arbuscula* – FB, IF, MT, TM, TT, YF; 203, 205, 210, 211, 214–217; on soil.
- \**Cladonia cenotea* – MT, TT; 216, 217; on soil.
- Cladonia cervicornis* – FB, IF; 205, 214, 221, 222; on soil.
- Cladonia chlorophaea* s. lat. – MT, ST, TM, TT; 206, 211, 216, 217; on soil.
- Cladonia coccifera* s. lat. – FB, IF, MT, ST, TT; 205, 210, 214, 216–218, 221, 222, 225; on soil.
- Cladonia cornuta* – MT, OF, ST, TT, YF; 203–205, 216, 217; on rotten wood and soil.
- \**Cladonia cyanipes* – ST; 206; on soil.
- \**Cladonia deformis* – MT, TT; 216, 217; on soil.
- Cladonia fimbriata* – ST; 206; on soil.
- \**Cladonia gracilis* ssp. *elongata* – FB, IF, MT, OF, ST, TM, TT, YF; 203–206, 210, 211, 214–217, 221; on soil.
- \**Cladonia gracilis* ssp. *turbinata* – FB, YF; 203, 210; on soil.
- \**Cladonia gracilis* ssp. *vulnerata* Ahti – FB, MT, TT; 210, 214, 216, 217; on soil.
- Cladonia phyllophora* – FB, ST, YF; 203, 205; on soil.
- Cladonia pleurota* – FB, IF, MT, TT; 210, 216, 217, 225, 226; on soil.
- \**Cladonia pocillum* – FB, ST; 205; on soil.
- Cladonia pyxidata* – BC, FB, IF, MT, ST, TM, TT, WM; 205, 210–218, 220, 221, 225; on soil.
- Cladonia rangiferina* – FB, MT, OF, ST, TT, YF; 203–205, 210, 216, 217, 221; on soil.
- \**Cladonia scabriuscula* – FB; 214; on soil.
- \**Cladonia squamosa* – ST; 205; on moribund mosses.
- Cladonia stricta* – FB; 214; on soil.
- \**Cladonia stygia* – OF; 204; on soil.
- \**Cladonia subulata* – ST; 205, 206; on mossy soil.
- Cladonia sulphurina* – MT, TT; 216, 217; on soil.
- \**Cladonia symphyrcarpia* – SB; 208; on soil.
- \**Cladonia uncialis* ssp. *biuncialis* – MT, TT; 216, 217; on soil.
- Dactylina arctica* – BC, FB, IF, MT, TM, TT; 209, 211, 214–218, 221, 222; on soil.
- Flavocetraria cucullata* – BC, FB, IF, MT, SB, ST, TM, TT, WM, YF; 203, 205, 208–218, 220–222, 224–226; mainly on soil, but also on *Larix* twigs.
- \**Flavocetraria nivalis* – FB, FM, SL; Mt. Rodinka, 210, 214, 221, 225; on soil.
- \**Fuscopannaria praetermissa* – FB, IF; 205, 218, 221, 222, 225, 226; on soil.
- \**Gyalecta foveolaris* – FB; 218; on mineral soil.
- \**Hypogymnia physodes* – ST; 205; on *Larix* bark.
- Hypogymnia subobscura* (Vain.) Poelt – BC, FB, IF, SL; Mt. Rodinka, 209, 210, 213–215, 221, 225; on soil.
- \**Japewia tornoënsis* – BC, FB, IF, MT, TT, WM; 209, 210, 212–217, 221, 222, 226; on mosses and dry twigs of dwarf shrubs.
- \**Lecanora epibryon* – BC; 224; on bryophytes.
- \**Lecanora leptacinella* – FB; 210; on dead moss.
- \**Lecidella wulfenii* – BC; 209, 220; on mineral soil.
- \**Leptogium gelatinosum* – FB; 205; on soil.
- \**Leptogium tenuissimum* – BC; 224; on soil.
- \**Lobaria linita* – IF; 219; on soil.
- \**Lopadium pezizoideum* – BC, FB; 210, 214, 220, 221, 225; on soil.

- \**Megaspora verrucosa* – FB, IF; 221, 222, 225; on soil.
- \**Micarea incrassata*. – BC, FB; 209, 210, 213; on sandy soil.
- Mycoblastus alpinus* – BC; 224; on mineral soil.
- Nephroma expallidum* – FB, ST; 205; on soil.
- Ochrolechia androgyna* – FB, IF; 221, 222, 225, 226; on soil.
- Ochrolechia frigida* – BC, FB, IF, MT, TT; 209, 210, 213–218, 220–222; on soil.
- \**Ochrolechia inaequatula* – BC, FB, IF, MT, TM, TT; 210, 211, 214–217, 220–222; on soil.
- Parmelia omphalodes* – FB, SL, WM; Mt. Rodinka, 210, 212; on soil.
- \**Parmelia skultii* Hale, syn. *Parmelia omphalodes* (L.) Ach. ssp. *glacialis* Skult – BC, FB, IF; 209, 210, 213–215, 218; on soil.
- \**Parmeliopsis ambigua* – ST; 205; on *Larix* bark.
- \**Parmeliopsis hyperopta* ST, YF; 203, 205; on *Larix* twigs.
- Peltigera aphthosa* – BC, FB, IF, OF, MT, ST, TT, YF; 203–206, 210, 216, 217, 221, 222, 224–226; on soil.
- Peltigera canina* – FB, IF, TM, WM; 210–212, 214, 216, 219; on soil.
- \**Peltigera didactyla* – FB, ST; 205, 206, 210, 221, 225; on soil.
- \**Peltigera lepidophora* – FB, ST; 205; on soil.
- \**Peltigera leucophlebia* – BC, FB, IF, TM, YF; 203, 211, 220–222; on soil.
- \**Peltigera malacea* – FB, YF; 203, 205; on soil.
- Peltigera polydactylon* – BC, FB, IF, TM; 211, 213, 214, 221, 225, 226; on soil.
- \**Peltigera rufescens* – FB, IF, SB, ST; 205, 208, 215; on soil.
- \**Peltigera scabrosa* – FB, IF, OF, TT; 204, 216, 218, 219, 221, 222; on soil.
- \**Pertusaria bryontha* – BC, FB, IF; 210, 214, 220–222; on soil.
- \**Pilophorus dovrensis* – BC; 220; on sand. In Russian Arctic previously only reported from Taimyr Peninsula (Zhurbenko 1998).
- Placynthiella icmalea* – ST; 206; on moribund mosses.
- Protopannaria pezizoides* – BC, FB, IF; 209, 213, 220–222, 224–226; on soil.
- Psoroma hypnorum* – BC, FB, IF, ST, TM; 205, 211, 214, 215, 220–222, 225; on soil.
- \**Ramalina almquistii* Vain. – FB; 210, 218; on soil.
- \**Rinodina mniaraea* – FB, ST; 205; on soil.
- \**Rinodina roscida* – FB, IF; 210, 221, 222, 225, 226; on soil.
- Rinodina turfacea* – BC, FB, MT, TT; 209, 210, 213, 214, 216–218, 220, 221, 225; on soil.
- Sphaerophorus globosus* – BC, FB, IF, MT, SL, TM, TT; Mt. Rodinka, 209–211, 213–218, 220–222, 225; on soil.
- \**Stereocaulon alpinum* – BC, FB, IF, SL, TT; 205, 210, 214, 216, 220–222, 225; on soil.
- \**Stereocaulon glareosum* – BC; 209; on sand.
- \**Stereocaulon paschale* – FB; 225; on soil.
- Stereocaulon tomentosum* – ST, YF; 203, 205; on soil.
- \**Sticta arctica* Degel. – IF; 215; on soil.
- Thamnolia vermicularis* var. *vermicularis* – BC, FB, IF, MT, SL, TM, TT, WM; Mt. Rodinka, 209–218, 221, 222, 225; on soil.
- Tuckermanopsis inermis* (Nyl.) Kärnefelt – FB; 210; on soil.
- Tuckermanopsis sepincola* – YF; 203; on *Larix* twigs.
- \**Vulpicida pinastri* – ST, YF; 203, 205; on *Larix* bark.

### Lichenicolous fungi

- #*Corticifraga fuckelii* – ST; 206; on *Peltigera rufescens* (thallus).
- \**Corticifraga peltigerae* – SB; 208; on *Peltigera rufescens* (thallus).
- \**Dactylospora diminuta* – FB; 210, 214; on *Rinodina turfacea* (apothecia, thallus).
- \**Endococcus nanellus* Ohlert – YF; 203; on *Stereocaulon tomentosum* (thallus: mostly phyllocladia, occasionally stem).
- #*Homostegia piggotii* – FB; 214; on *Parmelia omphalodes* (thallus). In Russia previously

only collected in the Karelia Republic (herbarium H, T. Ahti pers. comm.).

#*Phaeopyxis punctum* – ST; 205; on *Cladonia* sp. (basal squamules). In Russia previously reported only from the Northern Ural (Zhurbenko 2004).

\**Phaeosporobolus alpinus* – FB; 210, 214; on *Ochrolechia frigida* (thallus).

\**Sphaerellothecium minutum* – FB; 214; on *Sphaerophorus globosus* (thallus).

\**Stigmidium peltideae* – FB; 210; on *Peltigera aphthosa* (thallus).

\**Taeniolella pertusariicola* – BC, FB; 209, 210; on *Pertusaria bryontha* (apothecia). In Russia previously reported only from Altai and Taimyr Peninsula (Zhurbenko 1998, Zhurbenko & Davydov 2000).

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Mosses and lichens in the minimally disturbed forest communities of the Lower Amur River areas (Russian Far East). Komarovskie Chteniya [Komarov Lectures] 60: 9–66. [in Russian; [http://www.biosoil.ru/kr/Downloads/60\\_9.pdf](http://www.biosoil.ru/kr/Downloads/60_9.pdf)] Google Scholar. Yoshimura, I. (1968) The phytogeographical relationships between the Japanese and North American species of *Cladonia*. Zhurbenko, M. P. (2014) Lichenicolous fungi from Far East of Russia. *Folia Cryptogamica Estonica* 51: 113–119. CrossRef Google Scholar. 13. Lichens and allied non-lichenized fungi of virgin forests in the Caucasus State Nature Biosphere Reserve (Western Caucasus, Russia). *Herzogia*, Vol. 33, Issue. 1, p. 90. Thirty-one lichen-forming fungi, 12 lichenicolous fungi, and 5 non-lichenized fungi are reported as new for Arkhangelsk Region; 7 species are new for its mainland area. *Micarea fallax* is reported for the first time for Russia; *M. laeta* and *M. pusilla* are new for the European part of Russia. The second finding of *Nicropuncta rugulosa* for Russia is recorded; microconidia are first observed in this species. The records of ten species which have been included in the new edition of the Red Data Book of the Arkhangelsk Region (2020) are presented. *Nephromopsis laureri* from the Red Data Book of the Russian Federation (2008) and *Leptogium rivulare* from the IUCN Red List are reported for the first time for Arkhangelsk Region. Downloads. Download data is not yet available. 105 lichen taxa and 10 lichenicolous fungi are reported from the Kolyma delta region of the Russian Arctic. The lichenicolous fungi *Corticifraga fuckelii*, *Homostegia piggotii* and *Phaeopyxis punctum* are new to the Russian Arctic, another 7 fungi and 56 lichens are new to the Yana-Kolyma floristic subprovince of the Arctic. Mikhail P. Zhurbenko & Nadezhda V. Matveeva, Komarov Botanical Institute, Russian Academy of Sciences, Professor Popov 2, St.-Petersburg, 197376, Russia. E-mails: zhurb@MZ3838.spb.edu, NadyaM@NM10185.spb.edu Martha K. Reynolds & Donald A. Walker, Alaska Geobotany Center, Inst... Senior Curator Risto Virtanen participated in three expeditions to Arctic Russia with vessels along the Arctic coast from the Kola Peninsula to Wrangel Islands in 1988, 1992, and 1994. Collections are at OULU. Prof. (1973), 622 species and 10 subspecies and varieties of lichens, plus six species of lichenicolous fungi from Alaska, the Yukon, British Columbia, and Alberta, mainly along the Alaska Highway and some of its sideroads (Thomson and Ahti 1994) and 364 from Noatak National Preserve, Alaska (McCune et al. Fungi and lichens Esteri Ohenoja (OULU) participated in the International Symposium on Arctic and Alpine. Mycology in Greenland, Kangerlussuaq and Sisimiut in 2000. Bryophytes, fungi, lichens, and vascular plants are deposited to OULU. Lichens and lichenicolous fungi of the Klondike Gold Rush National Historic Park, Alaska, in a global biodiversity context. The Bryologist. 113: 439–515. <https://doi.org/10.1639/0007-2745-113.3.439>. Takhtadzhyan A.L. 1978. Floristicheskie oblasti Zemli [Floristic regions of the Earth]. Leningrad. 247 p. (In Russ). Rarely recorded lichens and lichen-allied fungi from the territory of the Baikal Reserve – additions for lichen flora of Russia. Turczaninowia. 19: 42–46. <https://doi.org/10.14258/turczaninowia.19.1.5>.