



Lichens of the Frankenhavøya Peninsula, Northern of Barentsøya, Svalbard

Liudmila KONOREVA^{1*}  and Sergey CHESNOKOV² 

¹ *Avrorin Polar-Alpine Botanical Garden-Institute of Kola Scientific Centre of RAS,
184250 Kirovsk, Murmansk Region, Russia*

² *Komarov Botanical Institute RAS, Professor Popov St. 2, 197376 St. Petersburg, Russia*

**corresponding author: <ajdarzapov@ynadex.ru>*

Abstract. This paper contributes to the studies on the lichen diversity of Barentsøya. It covers 211 species, of which four (*Buellia schaereri*, *Myriolecis zosterae* var. *palanderi*, *Rhizocarpon furfurosum*, *R. leptolepis*) are reported for the first time for the Svalbard archipelago. Additionally, 84 of the species are reported for the first time for Barentsøya. Our study includes 2 subspecies as well, both new for Barentsøya. Thirty-six species (16.8% among the identified species) are rare in Svalbard, whereas more than two thirds (70.1% from identified in the Barentsøya) are relatively widespread species in Svalbard and the Arctic.

Keywords: Arctic, Norway, lichen biota, new records, rare species.

Introduction

The history of lichen studies in the Svalbard archipelago dates back to the historical publication of Fries (1860, 1867). Since then, the knowledge has been supplemented by several authors (Vainio 1905; Elenkin 1907; Elenkin and Savicz 1912; Lynge 1926; Paulson 1928; Summerhayes and Elton 1928). Lynge (1938)



summarized information on lichens given by various authors and listed 145 macrolichens, and Mattick (1949) reviewed the lichen flora of Svalbard and listed about 450 species known in the archipelago.

The lichen flora of Svalbard was later completed by Nowak (1965), who studied lichens in Horsund, and by Eurola (1968, 1971) who reported 32 species from western and southern of the archipelago. Hertel and Ullrich (1976) made large collections at Amsterdamøya, Kongsfjorden and Longyearbyen areas reporting 21 new species and 52 new records for Svalbard and Amsterdamøya, respectively. Finally, Hertel reported 473 lichen species and supplemented his list with three more species new to Svalbard (Hertel 1981, 1997a).

Knowledge on the lichens of Horsnund, Bockfjorden, Sørkapp Land, Edgeøya and several other parts of Svalbard was supplemented successively by: Hafellner (1982), Elvebakk (1984a), Nimis (1985), Olech (1987, 1990), Olech and Alstrup (1989), Aptroot and Alstrup (1991), Elvebakk and Tønsberg (1992), Schuhwerk (1992), Øvstedal *et al.* (2009), Redchenko *et al.* (2010), Konoreva (2011), Singh and Ravindra (2013), Zhurbenko and Brackel (2013), Węgrzyn *et al.* (2015, 2019), Wietrzyk *et al.* (2016, 2017), Breuss (2017), Konoreva and Chesnokov (2018, 2021), Maciejowski *et al.* (2018), Wietrzyk-Pelka *et al.* (2018, 2021), Inoue *et al.* (2019), Konoreva *et al.* (2019b) and Czernyadjeva *et al.* (2020). Finally, Øvstedal *et al.* (2009) reported 742 species from Svalbard, but only 34 species from Barentsøya. In addition, some information on lichens of the region can be found in several taxonomic works on genera as: *Acarospora* A. Massal (Magnusson 1935), *Caloplaca* Th. Fr. (Magnusson 1944, 1950; Søchting 1989, 1992; Søchting and Olech 1995), *Lecidea* Ach. *s.l.* (Hertel 1977b, 1981, 1991), *Peltigera* Willd. (Gyelnik 1932; Vitikainen 1994), *Rinodina* (Ach.) Gray and *Rinodinella* H. Mayrhofer *et Poelt* (Mayrhofer 1984), and *Sagiolechia* A. Massal. (Vězda 1967).

The data on the lichen flora of Svalbard published in 2008 as Svalbard Lichens Database (SLD) listed 597 taxa with detailed annotations, remarks on the rarity of species, and literature references. It includes information on specimens deposited in the herbaria of the Botanical Museum of the University of Oslo (O), the Bergen Museum, University Bergen (BG), and the Arctic University of Norway (TROM). It also presents the most complete list of 123 lichens taxa of the Barentsøya. The database, however, misses several species reported by Øvstedal *et al.* (2009), *e.g.*, *Bryocaulon hyperborea* Øvstedal, *Cladonia* cf. *islandica*, *Lepraria rigidula* (de Lesd.) Tønsberg, *Montanelia sorediata* (Ach.) Divakar *et al.*, *Rhizocarpon dahlia* Øvstedal, and *Sporodictyon schaererianum* A. Massal.

The goal of this study is to collect and summarize information on the lichens of Barentsøya. Here we report both literature records and the results of our own fieldwork in this poorly studied and remote area.

Study Area

Barentsøya (approximately 1300 km²) is one of the five main islands of the Svalbard archipelago located in its eastern part, between Edgeøya and Western Spitsbergen. It is included in the Sørøst-Svalbard Nature Reserve, together with Edgeøya and a number of smaller islands. While a significant part of the island (more than 500 km²) remains glaciated, there is the ice-free peninsula of Frankenhøya, located at the northern side of Barentsøya, between Ginevra Bay and Dorstbukta. In addition to that, an ice-free mountainous area called Grimheia extends over thirteen square kilometers, also at the northern part of the island. This territory can be classified as the Northern Arctic tundra (Elvebakk *et al.* 1999), and provides habitats for a plethora of lichens, vascular plants, and mosses.

Materials and Methods

This work is a part of a large-scale study conducted by the Avrorin Polar-Alpine Botanical Garden-Institute Kola Science Center RAS in Svalbard. The lichens were collected by the first author in the area of Frankenhøya Peninsula (Barentsøya) in August 2011 (Table 1; Fig. 1) from coastal rocks and stone rubble, at a seashore colony of birds, a waterlogged area, river and stream valleys, and various types of tundra. In total, about 500 lichen specimens were collected, mainly terricolous and saxicolous, as well as species growing on driftwood, plant debris, mosses, and bones. We analyzed morphology and anatomy of the lichens using standard light microscopy and chemical tests (Smith *et al.* 2009), and identified species according to Foucard (2001), Øvstedal *et al.* (2009), Smith *et al.* (2009), and Nordic Lichen Flora (Ahti *et al.* 2002, 2007, 2013; Thell and Moberg 2011; Moberg *et al.* 2017). In addition, we used keys for individual lichen groups by Śliwa (2007) and Šoun *et al.* (2011). The voucher specimens are deposited at the herbarium of Avrorin Polar-Alpine Botanical Garden-Institute Kola Science Center RAS (KPABG).

The geographical names and topographic information used (Fig. 1) were obtained from the topographical Svalbard map service of the Norwegian Polar Institute (<https://toposvalbard.npolar.no/>). We based our estimates of species distributions on Elvebakk and Hertel (1996), Cooper and Wookey (2001), Osyczka (2006), Krzewicka and Maciejowski (2008), Osyczka and Węgrzyn (2008), Søchting *et al.* (2008), Urbanavichene and Koroleva (2008), Øvstedal *et al.* (2009), Ziaja *et al.* (2009), Redchenko *et al.* (2010), Konoreva (2011), Singh and Ravindra (2013), Zhurbenko and Brackel (2013), Węgrzyn *et al.* (2015, 2019), Wietrzyk *et al.* (2016, 2017), Breuss (2017), Konoreva and Chesnokov (2018, 2021), Maciejowski *et al.* (2018), Wietrzyk-Pelka *et al.* (2018,

Table 1

List of localities.

No.	Location	lat. (N)	long.(E)	altitude [m]	habitat	date	reference
1	Coast of Ginevra botnen, Heimland	78°35'34"	21°06'51"	alt. 10	at the bottom of the southern slope of a dolerite plateau, at the bog	03 Aug 2011	this study
2	Coast of Ginevrabotnen, Heimland	78°35'33"	21°07'24"	alt. 16	moist area at the bottom of the southern slope of a dolerite plateau, moss-sedge tundra	03 Aug 2011	this study
3	Coast of Ginevrabotnen, Heimland	78°35'20.0"	21°07'54.5"	alt. 18	dry Luzula-grass moss community covering areas between streams	03 Aug 2011	this study
4	Coast of Ginevrabotnen, Heimland, steep western slope of Steinbeisfjellet Mountain	78°34'45"	21°07'16"	alt. 114	seashore colony of birds, moss-grass-Salix sp. cover	04 Aug 2011	this study
5	Coast of Ginevrabotnen, Heimland	78°34'28"	21°06'04"	alt. 20	watterlogged area on the bank of a brook at the western slope of Steinbeisfjellet Mountain, sedge-luzula-moss tundra	05 Aug 2011	this study

No.	Location	lat. (N)	long.(E)	altitude [m]	habitat	date	reference
6	Coast of Ginevrabotnen, Heimland, western slope of Steinbeisfjellet Mountain	78°34'16.9"	21°06'17.2"	alt. 26	shallow brook in waterlogged area	05 Aug 2011	this study
7	Coast of Ginevrabotnen, Heimland, western slope of Steinbeisfjellet Mountain	78°34'08"	21°06'27"	alt. 37	stream on terrace, stone rubble under the rocks	05 Aug 2011	this study
8	Glama Stream valley at the bottom of the southern slope of Steinbeisfjellet Mountain	78°33'47"	21°08'01"E	alt. 76	tundra with frost boils	05 Aug 2011	this study
9	Glama Stream valley at the bottom of the southern slope of Steinbeisfjellet Mountain	78°33'42"	21°08'52"	alt. 96	waterlogged area under a rock stream	05 Aug 2011	this study
10	Steinbeisfjellet plateau	78°33'44"	21°10'32"	alt. 192	rock outcrops and Luzula-moss tundra	05 Aug 2011	this study
11	Steinbeisfjellet Mountain	78°35'00"	21°09'38"	alt. 104	plateau, dolerite rock outcrops on the bank of a lake	05 Aug 2011	this study

No.	Location	lat. (N)	long.(E)	altitude [m]	habitat	date	reference
12	Central part of the Frankenhavvøya Peninsula	78°35'32"	21°10'59"	alt. 69	dolerite plateau, dolerite cliffs with cracks along the west bank of a stream when facing south	06 Aug 2011	this study
13	Between Steinbeisfjellet Mountain and Cape Wojekow	78°36'	21°13'	n/d	n/d	01 August 1936	leg. E. Dahl
14	North side of Steinbeisfjellet Mountain	78°34'	21°08'	n/d	n/d	01 August 1936	leg. E. Dahl
15	Northwest side of Steinbeisfjellet Mountain	78°34'	21°06'	n/d	n/d	01 August 1936	leg. E. Dahl
16	Southwest side of Steinbeisfjellet Mountain	78°33'	21°07'	n/d	n/d	02 August 1936	leg. E. Dahl

identified as rare: *Alectoria gowardii* Lumbsch, *Bryocaulon hyperborea*, *Fuscopannaria abscondita* P. M. Jørg., *Peltigera extenuata* (Nyl. ex Vain.) Lojka, *Peltigera lyngei* Gyeln., and *Placynthium pulvinatum* Øvst.

Even though we significantly expanded the list of lichens known from the area by adding 84 species and two subspecies, the lichen flora of Barentsøya remains poorly studied. All listed species are common in the Arctic (Hansen 2009; Kristinsson *et al.* 2010; Konoreva *et al.* 2019a) and in high mountains (Makryi 2002; Urbanavichus and Urbanavichene 2004; Sedelnikova 2013; Chesnokov and Konoreva 2015), although with exception of: *Alectoria gowardii*, *Amandinea coniops* (Wahlenb.) M. Choisy ex Scheid. et H. Mayrhofer, *Bryocaulon hyperborea*, *Buellia schaereri*, *Fuscopannaria abscondita*, *Mycobilimbia* cf. *epixanthoides*, *Pannaria hookeri* (Borrer ex Sm.) Nyl., *Peltigera lyngei*, *Placynthium pulvinatum*, *Rhizocarpon dahlii*, and *Usnea sphacelata* R. Br., which are widespread in the boreal zone and rare in the Arctic. Although it could be argued that the presence of boreal species is an indicator of recent climate change, we suspect that this pattern may be an artifact due to the difficulty in identification of certain species. For instance, *Buellia schaereri* is probably more widespread in the Arctic on driftwood because the species is similar to the more common *Amandinea punctata* and thus could be overlooked. *Mycobilimbia* cf. *epixanthoides* were found Dahl (1936) but were not recorded by us. Its presence on Barentsøya, requires further study and observation. This species has so far been found on Svalbard, and Øvstedal *et al.* (2009) emphasised that due to the wider ascospores the presence of this species on the island needs to be reviewed.

Among the Svalbard lichens, nine species, *i.e.*, *Alectoria gowardii*, *Amandinea coniops*, *Bryocaulon hyperborea*, *Fuscopannaria abscondita*, *Pannaria hookeri*, *Peltigera lyngei*, *Placynthium pulvinatum*, *Rhizocarpon dahlii*, and *Usnea sphacelata*, are known only from the Arctic. A few of them, *i.e.*, *Alectoria gowardii*, *Bryocaulon hyperborea*, *Fuscopannaria abscondita*, *Placynthium pulvinatum*, and *Rhizocarpon dahlii*, were described just recently (Halonen *et al.* 2009, Øvstedal *et al.* 2009) and their distribution and ecology need further research.

Lichen diversity was the highest in the communities associated with coastal rocks and bird colonies (locality 4 with 53 species), and swampy seacoast (localities 1 and 5 with 41 and 33 species, respectively). The swampy communities, with higher humidity, had fewer lichen species (localities 6 and 9 with 13 and 8 species, respectively), presumably because lichens were outcompeted by faster growing bryophytes.

Rock outcrops (localities 10, 11 and 12), stone rubble (locality 7) and tundra (localities 2, 3 and 8) contained more than half of the identified species, one third of which were not found in other communities. Each of these communities contains several species (from 13 to 22 species), which are up to this point insufficiently studied, due to the prevailing severe weather conditions and the presence of a polar bear in the area.

Conclusion

The total of 211 lichen species and two subspecies were reported from Barentsøya, of which 84 species and two subspecies are reported for the first time. *Buellia schaeereri*, *Myriolecis zosteræ* var. *palanderi*, *Rhizocarpon furfurosum*, *R. leptolepis* are new to the Svalbard archipelago. No species indicative of climate change have been found on the Barentsøya.

Acknowledgements. — We are grateful to Einar Timdal, University of Oslo, Norway, for managing the Svalbard lichen database. The work of L. Konoreva was supported by the institutional research projects of the Avrorin Polar-Alpine Botanical Garden-Institute of Kola SC RAS *Plant and soil resources, improvement of management practices in protected natural areas in the context of climate change and anthropogenic impact and optimization of human habitat in Spitsbergen Archipelago*, No. 1021032422551-2-1.6.11 and No. 1021071612832-8-1.6.11 *Flora of lichens, cyanoprokaryotes, bryophytes and vascular plants of the European Arctic and Subarctic*. The work of S. Chesnokov was supported by Russian Foundation for Basic Research (RFBR) grant No. 18-05-60093 *Arctic Spatial and temporal changes in lichen- and bryophyte flora of Russian Arctic and adjacent territories in relation to natural processes and anthropogenic influence* and institutional research projects of the Komarov Botanical Institute RAS *Flora and taxonomy of algae, lichens and bryophytes of Russia and phytogeographically important regions of the world* No. 121021600184-6. We would like to thank two reviewers for their valuable comments who helped to improve this paper.

References

- Ahti T., Jørgensen P.M., Kristinsson H., Moberg R., Söchting U. and Thor G. 2002. *Nordic Lichen Flora Vol. 2. Physciaceae*. TH-tryck AB, Uddevalla.
- Ahti T., Jørgensen P.M., Kristinsson H., Moberg R., Söchting U. and Thor G. 2007. *Nordic Lichen Flora Vol. 3. Cyanolichens*. Mediaprint AB, Uddevalla.
- Ahti T., Stenroos S. and Moberg R. 2013. *Nordic Lichen Flora Vol. 5. Cladoniaceae*. Zetterqvist tryckeri AB, Göteborg.
- Alstrup V. and Olech M. 1993. Lichenicolous fungi from Spitsbergen. *Polish Polar Research* 14: 33–42.
- Aptroot A. and Alstrup V. 1991. Lichens from Edgeøya, Svalbard. *Graphis Scripta* 3: 73–75.
- Breuss O. 2017. Flechten aus Spitzbergen im Herbarium des Oberösterreichischen landesmuseums (LI), gesammelt 1975 von Werner Repetzky. *Stapfia* 107: 163–168.
- Chesnokov S. and Konoreva L. 2015. Additions to the lichen biota of SE Siberia: records from the Stanovoye Nagor'e Highlands (Trans-Baikal Region, Russia). *Polish Botanical Journal* 60: 203–216.
- Cooper E.J. and Wookey P.A. 2001. Field measurements of the growth rates of forage lichens, and the implications of grazing by Svalbard reindeer. *Symbiosis* 31: 173–186.
- Czernyadjeva I.V., Ahti T., Boldina O.N., Chesnokov S.V., Davydov E.A., Doroshina G.Ya., Fedosov V.E., Khetagurov Kh.M., Konoreva L.A., Kotkova V.M., Kuzmina E.Yu., Lavrentiev M.V., Liksakova N.S., Nikolayev I.A., Popova N.N., Safronova T.V., Shadrina S.N. and

- Yakovchenko L.S. 2020. New cryptogamic records. 6. *Novosti Sistematiki Nizshikh Rastenii* 54: 537–557.
- Dobrysh A.A. 2003. Rhizocarpaceae M. Choisy ex Hafellner. In: Golubkova N.S. (eds.). *Handbook of the lichens of Russia* 8. *Bacidiaceae, Catillariaceae, Lecanoraceae, Megalariaceae, Mycobilimbiaceae, Rhizocarpaceae, Trapeliaceae*. Saint-Petersburg, Nauka: 198–238 (in Russian).
- Elenkin A.A. 1907. Lichens collected on the Spitsbergen Islands by A. A. Byalynitskiy-Birulei and A. Bunge in 1899. *Trudy Botanicheskogo Muzeia Imperatorskoi Akademii Nauk* 3: 60–63 (in Russian).
- Elenkin A.A. and Savicz V.P. 1912. Lichens collected by I.V. Palibin in the voyage of the icebreaker *Ermak* in the Arctic Ocean in 1901. *Acta Horti Petropolitani* 32: 94–97 (in Russian).
- Elvebakk A. 1984. Contributions to the lichen flora and ecology of Svalbard, Arctic Norway. *The Bryologist* 87: 308–313.
- Elvebakk A. and Hertel H. 1996. A catalogue of Svalbard plants, fungi, algae and cyanobacteria. Part 6. Lichens. *Norsk Polarinstitutt Skrifter* 198: 271–359.
- Elvebakk A. and Tønsberg T. 1992. Additions to the lichen flora of Svalbard. *Graphis Scripta* 3: 140–147.
- Elvebakk A., Elven R. and Razzhivin V.Y. 1999. Delimitation, zonal and sectoral subdivision of the Arctic for the Panarctic Flora Project. In: Nordal I. and Razzhivin V.Y. (eds.). *The species concept in the High North – A panarctic flora initiative*. The Norwegian Academy of Science and Letters, Oslo, Norway: 375–386.
- Eurola S. 1968. Über die Fjeldheidevegetation in den Gebieten von Isfjorden und Hornsund in Westspitzbergen. *Aquilo. Seria Botanica* 7: 1–56.
- Eurola S. 1971. Die Vegetation einer Sturzhalde (Sveagruva, Spitzbergen, 77°53' n. Br.). *Aquilo, Seria Botanica* 10: 8–28.
- Foucard T. 2001. *Svenska skorplavlar och svampar som växer på dem*. Interpublshing, Stockholm.
- Foucard T., Moberg R. and Nordin A. 2002. *Buellia*. In: Ahti T., Jørgensen P.M., Kristinsson H., Moberg R., Søchting U. and Thor G. (eds.). *Nordic Lichen Flora Vol. 2. Physciaceae*. TH-tryck AB, Uddevalla: 11–25.
- Fries T.M. 1860. Lichenes Arctoi. *Ex Actis Regiae Societatis Scientiarum Upsaliensis Seriei III* 3: 103–398.
- Fries T.M. 1867. Lichenes Spitsbergenses. *Kongl Svenska Vetenskaps-Akademiens Handlingar* 72: 1–53.
- Gyelnik V. 1932. Enumeratiolichenum europaeorum novorum rariorumque. 1. *Annales Mycologici* 30: 442–459.
- Hafellner J. 1982. Flechtenfunde am Bockfjord, Spitzbergen. Ergebnisse der Österreichischen Spitzbergen-Expedition 1979, I. *Phyton* 22: 23–50.
- Hafellner J. 2010. Contributions to a revision of lichenized, phaeospored species of *Polyblastia* coll., mainly in Central European mountains. *Bibliotheca Lichenologica* 104: 117–141.
- Halonen P., Myllys L., Velmala S. and Hyvärinen H. 2009. *Gowardia* (Parmeliaceae) – a new alectorioid lichen genus with two species. *The Bryologist* 112: 138–146.
- Hansen E.S. 2009. Lichens from Johannes V. Jensen Land, N Greenland, the northernmost arctic land area. *Willdenowia* 39: 179–186.
- Hertel H. 1977a. Bemerkenswerte Flechtenfunde aus dem Gebiet des Kongsfjordes und des Isfjordes (Spitzbergen). *Herzogia* 4: 367–401.
- Hertel H. 1977b. *Lecidea* in der Arktis I. *Mitteilungen der Botanischen Staatssammlung München* 13: 337–352.
- Hertel H. 1981. *Lecidea* in der Arktis II. *Mitteilungen der Botanischen Staatssammlung München* 17: 171–184.

- Hertel H. 1991. *Lecidea* in der Arktis III (lecodeoide Flechten, Lecanorales). *Mitteilungen der Botanischen Staatssammlung München* 30: 297–333.
- Hertel H. and Ullrich H. 1976. Flechten von Amsterdamøya (Svalbard). *Mitteilungen aus der Botanischen Staatssammlung München* 12: 417–512.
- Inoue T., Uchida M., Inoue M., Kaneko R., Kudoh S., Minami Y. and Kanda H. 2019. Vegetation data of high Arctic lichens on Austre Brøggerbreen glacier foreland, Ny-Ålesund, Svalbard, in 1994. *Polar Data Journal* 3: 1–11.
- Jørgensen P.M. and Zhurbenko M. 2002. Two new, remarkable, Arctic species in the lichen genus *Fuscopannaria* (Pannariaceae, lichenized Ascomycetes). *The Bryologist* 105: 465–469.
- Kondratyuk S.Y., Lököš L., Farkas E., Kärnefelt I., Thell A., Yamamoto Y. and Hur J.-S. 2020. Three new genera of the Teloschistaceae proved by three gene phylogeny. *Acta Botanica Hungarica* 62: 109–136.
- Konoreva L.A. 2011. A contribution to the lichens of vicinity of the former Pyramiden settlement (Spitsbergen Island, Svalbard Archipelago). *Novosti sistematiki nizshikh rastenii* 45: 183–193 (in Russian).
- Konoreva L.A. and Chesnokov S.V. 2018. Lichens of vicinity of the former township Kolsbey (West Spitsbergen). *Bulletin of the Kola Scientific Center of the Russian Academy of Sciences* 3: 31–42 (in Russian).
- Konoreva L.A. and Chesnokov S.V. 2021. Lichens of Innvika Bay, Prins Oscars Land (Nordaustlandet, Svalbard). *Czech Polar Reports* 11: 253–269.
- Konoreva L.A., Kholod S.S., Chesnokov S.V. and Zhurbenko M.P. 2019a. Lichens of Franz Josef Land archipelago. *Polish Polar Research* 40: 139–170.
- Konoreva L., Kozhin M., Chesnokov S. and Hong S.G. 2019b. Lichens and vascular plants in Duvefjorden area on Nordaustlandet, Svalbard. *Czech Polar Reports* 9: 182–199.
- Kristinsson H., Zhurbenko M.P. and Hansen E.S. 2010. Panarctic checklist of lichens and lichenicolous fungi. *CAFF Technical Report* 20: 1–120.
- Krzewicka B. and Maciejowski W. 2008. Lichen species from the northeastern shore of Sørkapp Land (Svalbard). *Polar Biology* 31: 1319–1324.
- Lumbsch H.T. and Huhndorf S.M. 2010. Myconet Volume 14. Part One. Outline of Ascomycota—2009. Part Two. Notes on Ascomycete Systematics. Nos. 4751–5113. *Fieldiana Life and Earth Sciences* 1: 1–64.
- Lyngbe B. 1926. Lichens from Bear Island (Bjørnøya) collected by Norwegian and Swedish expeditions, chiefly by Th. M. Fries during the Swedish polar expedition of 1868. *Resultater av de Norske Statsunderstøttede Spitsbergen Ekspeditioner* 1: 1–78.
- Lyngbe B. 1938. Lichens from the west and north coasts of Spitsbergen and the North-East Land collected by numerous expeditions. I. The macrolichens. *Skrifter Norsk videnskaps-akademi i Oslo. I. Matematisk-naturvidenskabelig klasse* 6: 1–136.
- Lyngbe B. 1940. Et bidrag til Spitsbergens lavflora. Laver samlet av Emil Hadac, fortrinnsvis i Sassenområdet, sommeren 1939. *Skrifter om Svalbard og Ishavet* 79: 1–22.
- Maciejowski W., Osyczka P., Smykla J., Ziaja W., Ostafin K. and Krzewicka B. 2018. Diversity and distribution of lichens in recently deglaciated areas of southeastern Spitsbergen. *Acta Societatis Botanicorum Poloniae* 87: 3596.
- Magnusson A.H. 1935. The lichen-genus *Acarospora* in Greenland and Spitsbergen. *Nyt Magazin for Naturvidenskaberne* 75: 221–241.
- Magnusson A.H. 1944. Studies in the ferruginea-group of the genus *Caloplaca*. *Kungliga Vetenskaps- och Vitterhets-samhälles Handlingar, Sjätte Följden, serie B* 3: 1–71.
- Magnusson A.B. 1950. On some species of *Blastenia* and *Caloplaca* with black apothecia, *Botaniska Notiser* 1950: 369–386.
- Makryi T.V. 2002. To the lichen flora of the Stanovoye Nagorye Uplands (Baikalian Siberia). I. The epilithic lichens of the Kodar Range. *Turczaninowia* 5: 47–67 (in Russian).
- Mattick F. 1949. Die Flechten Spitzbergens. *Polarforschung* 19: 261–273.

- Mayrhofer H. 1984. Die saxicolen Arten der Flechtengattung *Rinodina* und *Rinodinella* in der alten Welt. *Journal of the Hattori Botanical Laboratory* 55: 327–493.
- Moberg R., Tibell S. and Tibell L. 2017. *Nordic Lichen Flora Vol. 6. Verrucariaceae I*. Billes Tryckeri AB, Molndal.
- Nimis P.L. 1985. Structure and floristic composition of a high arctic tundra: Ny Ålesund (Svalbard archipelago). *Inter-Nord* 17: 47–58.
- Nowak J. 1965. The lichens from Hornsund (S.W.-Spitsbergen) collected during the Polish polar expeditions in 1957 and 1958. *Fragmenta Floristica et Geobotanica* 11: 171–190.
- Olech M. 1987. Materials to the lichen flora of Hornsund (SW Spitsbergen). *Zeszyty Naukowe Uniwersytetu Jagiellońskiego, Prace Botaniczne* 15: 165–168.
- Olech M. 1990. Lichens of the NW Sørkapp Land (Spitsbergen). *Zeszyty Naukowe Uniwersytetu Jagiellońskiego, Prace Botaniczne* 21: 197–210.
- Olech M. and Alstrup V. 1989. Lichens new to Spitsbergen. *Graphis Scripta* 2: 146–148.
- Osyczka P. 2006. The lichen genus *Cladonia* (Cladoniaceae, lichenized Ascomycota) from Spitsbergen. *Polish Polar Research* 27: 207–242.
- Osyczka P. and Węgrzyn M. 2008. Lichens on lignum in the coastal regions of western Spitsbergen (Svalbard). *Biologia* 63: 1069–1072.
- Øvstedal D.O., Tønsberg T. and Elvebakk A. 2009. The lichen flora of Svalbard. *Sommerfeltia* 33: 1–393.
- Paulson R. 1928. Lichens of Spitsbergen and North-East Land. *Journal of Botany* 66: 249–253.
- Redchenko O., Košnar J. and Gloser J. 2010. A contribution to lichen biota of the central part of Spitsbergen, Svalbard Archipelago. *Polish Polar Research* 31: 159–168.
- Saag L., Saag A. and Randlane T. 2009. World survey of the genus *Lepraria* (Stereocaulaceae, lichenized Ascomycota). *The Lichenologist* 41: 25–60.
- Schuhwerk F. 1992. Die Berücksichtigung der Ökologie in der Lichenometrie: Datierung mit Sukzessionsstadien von Flechtengesellschaften. In: Blümel W.D. (ed.). *Geowissenschaftliche Spitzbergen-Expedition 1990 und 1991 "Stofftransporte Land-Meer in polaren Geosystemen"*. Stuttgarter Geographische Studien 117: 161–175.
- Sedelnikova N.V. 2013. Species diversity of lichen biota of the Altai-Sayan ecological region. *Plant Life of Asian Russia* 2: 12–54 (in Russian).
- Singh S.M. and Ravindra R. 2013. Chapter 7. Impact of Climate Change on Lichen and Moss Communities in Ny-Ålesund, Arctic: Some Preliminary Observations. In: Sinha R. and Ravindra R. (eds.). *Earth System Processes and Disaster Management*. Society of Earth Scientists Series 1, Springer-Verlag Berlin Heidelberg: 93–100.
- Svalbard Lichens Database. 2008. https://nhm2.uio.no/botanisk/nxd/sval_L/sld_e.htm
- Śliwa L. 2007. A revision of the *Lecanora dispersa* complex in North America. *Polish Botanical Journal* 52: 1–70.
- Smith C.W., Aptroot A., Coppins B.J., Fletcher A., Gilbert O.L., James P.W. and Wolseley P.A. 2009. *The lichens of Great Britain and Ireland*. The British Lichen Society, London.
- Søchting U. 1989. Lignicolous species of the lichen genus *Caloplaca* from Svalbard. *Opera botanica* 100: 241–257.
- Søchting U. 1992. On the identity and distribution of some Nordic *Caloplaca* species. *Graphis Scripta* 4: 91–92.
- Søchting U. and Olech M. 1995. The lichen genus *Caloplaca* in polar regions. *The Lichenologist* 27: 463–471.
- Søchting U., Balschmidt Lorentsen L. and Arup U. 2008. The lichen genus *Caloplaca* (Ascomycota, Lecanoromycetes) on Svalbard. Notes and additions. *Nova Hedwigia* 87: 69–96.
- Šoun J., Vondrák J., Søchting U., Hrouzek P., Khodosovtsev A. and Arup U. 2011. Taxonomy and phylogeny of the *Caloplaca cerina* group in Europe. *The Lichenologist* 43: 113–135.
- Summerhayes V.S. and Elton C.S. 1928. Further contributions to the ecology of Spitsbergen. *Journal of Ecology* 16: 193–268.

- Thell A. and Moberg R. 2011. *Nordic Lichen Flora Vol. 4. Parmeliaceae*. Zetterqvist tryckeri, Goteborg.
- Urbanavichene I.N. and Koroleva N.E. 2008. Lichens. In: Koroleva N.E., Konstantinova N.A., Belkina O.A., Davydov D.A., Likhachev A.Yu., Savchenko A.N. and Urbanavichene I.N. (eds.). *Flora of Vegetation of Grøn fjord area (Spitsbergen archipelago)*. K&M, Apatity: 81–92 (in Russian).
- Urbanavichus G.P. 2010. A checklist of the lichen flora of Russia. St. Petersburg, Nauka (in Russian).
- Urbanavichus G.P. and Urbanavichene I.N. 2004. Lichens. In: Afonina O.M. and Golubkova N.S. (eds.). *The present-day state of biological diversity within protected areas in Russia. Issue 3. Lichens and Bryophytes*. IUCN – The World Conservation Union, Moscow: 5–235 (in Russian).
- Vainio E.A. 1905. Lichenes expeditionis G. Amdrup (1898-1902). *Meddelelser om Grønland* 30: 125–141.
- Vězda J. 1967. Flechtensystematische Studien VI. Die GaUttung *Sagiolechia* Massal. *Folia Geobotanica et Phytotaxonomica* 2: 383–396.
- Vitikainen O. 1994. Taxonomic revision of *Peltigera* (lichenized Ascomycotina) in Europe. *Annales Botanici Fennici* 152: 1–96.
- Vitikainen O. 2007. Peltigeraceae. In: Ahti T., Jørgensen P.M., Kristinsson H., Moberg R., Søchting U. and Thor G. (eds.). *Nordic Lichen Flora 3. Cyanolichens*. The Nordic Lichen Society, Museum of Evolution, Uppsala University, Uddevalla: 113–131.
- Węgrzyn M., Wietrzyk P., Adamska E. and Nicia P. 2015. New records of driftwood lichens in the Kaffiøyra Plain (NW Spitsbergen, Svalbard). *Polish Polar Research* 36: 189–195.
- Węgrzyn M.H., Wietrzyk-Pelka P., Galanty A., Cykowska-Marzencka B. and Sundset M.A. 2019. Incomplete degradation of lichen usnic acid and atranorin in Svalbard reindeer (*Rangifer tarandus platyrhynchus*). *Polar Research* 38: 3375.
- Westberg M. 2007. *Candelariella* (Candelariaceae) in western United States and northern Mexico: the polysporous species. *The Bryologist* 110: 375–390.
- Westberg M., Moberg R., Myrdal M., Nordin A. and Ekman S. 2021. *Santesson's Checklist of Fennoscandian Lichen-Forming and Lichenicolous Fungi*. Uppsala University, Museum of Evolution.
- Wietrzyk P., Węgrzyn M. and Lisowska M. 2016. Vegetation diversity and selected abiotic factors influencing the primary succession process on the foreland of Gåsbreen, Svalbard. *Polish Polar Research* 37: 493–509.
- Wietrzyk P., Węgrzyn M. and Lisowska M. 2017. Lichen diversity on glacier moraines in Svalbard. *Cryptogamie, Mycologie* 38: 67–80.
- Wietrzyk-Pelka P., Otte V., Węgrzyn M.H. and Olech M. 2018. From barren substrate to mature tundra – lichen colonization in the forelands of Svalbard glaciers. *Acta Societatis Botanicorum Poloniae* 87: 3599.
- Wietrzyk-Pelka P., Rola K., Patchett A., Szymański W., Węgrzyn M.H. and Björk R.G. 2021. Patterns and drivers of cryptogam and vascular plant diversity in glacier forelands. *Science of The Total Environment* 770: 144793.
- Zhurbenko M.P. 2010. Lichenicolous fungi and lichens growing on *Stereocaulon* from the Holarctic, with a key to the known species. *Opuscula Philolichenum* 8: 9–39.
- Zhurbenko M.P. and Brackel W.V. 2013. Checklist of lichenicolous fungi and lichenicolous lichens of Svalbard, including new species, new records and revisions. *Herzogia* 26: 323–359.
- Ziaja W., Maciejowski W. and Ostafin K. 2009. Coastal Landscape Dynamics in NE Sørkapp Land (SE Spitsbergen), 1900–2005. *A Journal of the Human Environment* 38: 201–208.

Appendix

Annotated check-list of lichens in the northern part of Barentsøya, Svalbard; details of the location are given in Table 1.

The following abbreviations and notation are in the list:

! – new to Svalbard;

* – new to Barentsøya;

– known only from the Svalbard Lichens Database and Øvstedal *et al.* (2009);

KPABG – herbarium of the Polar-Alpine Botanical Garden-Institute;

O – herbarium of the University of Oslo;

BG – herbarium of the University of Bergen;

TROM – herbarium of the Arctic University of Norway.

Acarospora badiofusca (Nyl.) Th. Fr. – **14** (O-L125351), **15** (O-L162852), on both calcareous and non-calcareous rock. Widely distributed throughout Svalbard, but it is no common (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Breuss 2017; Maciejowski *et al.* 2018; SLD 2008).

Acarospora fuscata* (Schrad.) Th. Fr. – **1 (KPABG-13378, 13382), **4** (KPABG-13393), on siliceous stones on the coast and seashore colony of birds. Rare in Svalbard. Known from a few scattered sites of Svalbard: Ny-Friesland – Dirksbukta as f. *flavescens* H. Magn. (Summerhayes and Elton 1928), Nordenskiöld Land – Grønfjorden, Longyearbyen, Van Mijenfjorden as “very scantily” or as “not typical” (Magnusson 1935), Rieperbreen (Wietrzyk *et al.* 2017) and Björndalen (Breuss 2017); Oskar II Land – Irenebreen (Wietrzyk *et al.* 2017).

Acarospora molybdina (Wahlenb.) A. Massal. – **4** (KPABG-13154, 13156, 13162, 13163, 13168, 13199), **5** (KPABG-13176, 13393–13397, 13399, 13402, 13403, 13406, 13410, 13411, 13417, 13420, 13424, 13428), **16** (O-L127182), on siliceous stones on the coast and seashore colony of birds. Widely distributed throughout Svalbard, especially along the seashore (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Ziaja *et al.* 2009; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018; Maciejowski *et al.* 2018; SLD).

Acarospora veronensis* A. Massal. – **11 (KPABG-13344), on dolerite rock. Rare in Svalbard. Known from a few scattered sites of Svalbard: Ny-Friesland – Dirksbukta (Summerhayes and Elton 1928); Nathorst Land – Forsbladhamna (Magnusson 1935); Nordenskiöld Land – Longyearbyen (Øvstedal *et al.* 2009); Nordaustlandet – Sjuøyane, Phippsøya (Øvstedal *et al.* 2009), Damflya (Konoreva *et al.* 2019b), Innvika Bay (Konoreva and Chesnokov 2021); Sørkapp Land – Tvillingtoppen (Maciejowski *et al.* 2018).

Adelolecia kolaensis* (Nyl.) Hertel et Rambold – **1 (KPABG-13377), **4** (KPABG-133422), **8** (KPABG-13341), on siliceous stones on the coast, seashore colony of birds and tundra. Widely distributed throughout Svalbard, but easily overlooked species (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva and Chesnokov 2021; SLD).

Alectoria gowardii* Lumbsch – **11 (KPABG-13345), on soil. Rare in Svalbard. Reported to the second time from Svalbard. Previously reported from Nordaustlandet – Innvika Bay (Konoreva and Chesnokov 2021). The species was described by Halonen *et al.* (2009) as *Gowardia arctica* Halonen *et al.* from the closely related *Alectoria nigricans* it is distinguished by shiny thallus and mainly uniform color, as well as the absence of well-defined main branches. *Alectoria gowardii* could be confused with *Bryoria nitidula* (Th. Fr.) Brodo & D. Hawksw. and *Bryocaulon divergens* (Ach.) Kärnefelt. But *Bryoria nitidula* has dark-colored pseudocyphellae and produces fumarprotocetraric acid (K-, PD+ red); and *Bryocaulon divergens* is readily separated by its red-brown color. In the world, the species is known from northern regions of Canada and Russia along the Arctic Ocean coast and islands (Halonen *et al.* 2009).

Alectoria nigricans (Ach.) Nyl. – **1** (KPABG-13144), **7** (KPABG-13184), **13** (O-L126259, O-L126263, O-L138267, O-L152990), **16** (O-L138405), on soil over the boulders, among

- mosses and small stones. Widely distributed throughout Svalbard and common (Elvebakk and Hertel 1996; Cooper and Wookey 2001; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva 2011; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- Allantoparmelia alpicola* (Th. Fr.) Essl. – **14** (O-L132454, O-L132466, O-L134829), on siliceous stones. Widely distributed throughout Svalbard and it is common species on siliceous rocks (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Konoreva *et al.* 2019b; SLD).
- **Amandinea coniops* (Wahlenb.) M. Choisy *ex* Scheid. *et* H. Mayrhofer – **4** (KPABG-13393, 13395, 13396, 13397, 13399, 13402, 13403, 13406, 13411, 13418, 13420–13423, 13436), on siliceous stones on the coast and seashore colony of birds. Widely distributed throughout Svalbard, especially along the seashore colony of birds and rocks (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Breuss 2017; Maciejowski *et al.* 2018; Inoue *et al.* 2019; Konoreva and Chesnokov 2021; SLD).
- **Arthonia epiphyscia* Nyl. – **4** (KPABG-13401), on the thallus of *Physcia* sp. Rare in Svalbard. Reported to the second time from Svalbard. Previously reported on *Physcia dubia* thallus from Dickson Land – near Nidedalselva River mouth (Zhurbenko and Brackel 2013).
- Aspicilia heteroplaca* (Zahlbr.) Oxner – **13** (O-L135279), **15** (O-L171662), on stone. It is apparently a variable species. Probably widely distributed throughout Svalbard. The specimens verified by Øvstedal and coauthors (2009) refer to Barentsøya and James I Land – Kapp Smith. Also, it known from Nordenskiöld Land – Longyearbyen (Breuss 2017).
- Aspicilia nikrapensis* Darb. – **15** (O-L126273, O-L171641), **16** (O-L171681), on sandstones. Widely distributed throughout Svalbard and common (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; SLD).
- Aspicilia rosulata* Körb. – **15** (O-L171764), on sandstones and limestones. Widely distributed throughout Svalbard and common (Øvstedal *et al.* 2009; Breuss 2017; SLD).
- **Athallia holocarpa* (Hoffm.) Arup *et al.* – **4** (KPABG-13393, 13395, 13418), **12** (KPABG-13213), on siliceous stones near seashore colony of birds and on stone near creek in tundra. Widely distributed throughout Svalbard and common (Øvstedal *et al.* 2009; Osyczka and Węgrzyn 2008; Söchting *et al.* 2008; Konoreva 2011; Wietrzyk *et al.* 2017; SLD).
- Bellemerea subsorediza* (Lynge) R. Sant. – **15** (O-L171697), on stone. Widely distributed throughout Svalbard, but it is no common (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Breuss 2017; Maciejowski *et al.* 2018; SLD).
- Biatora subduplex* (Nyl.) Räsänen *ex* Printzen – **1** (KPABG-13391), **5** (KPABG-13170), **6** (KPABG-13360), **12** (KPABG-13215, 13368), **15** (O-L128295), on soil and mosses. Widely distributed throughout Svalbard and common (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; Konoreva and Chesnokov 2021; SLD).
- **Biatora vernalis* (L.) Fr. – **12** (KPABG-13372), on soil and mosses. Rare in Svalbard. Known from a few scattered sites of Svalbard: Sørkapp Land – Sergeijevskardet (Alstrup and Olech 1993); Oscar II Land – Ny-Ålesund area (as *B. cf. vernalis*; Inoue *et al.* 2019); Bjørnøya (TROM-L690793, L690796, L690797); Nathorst Land – Ullafjell (BG-L73318); Albert I Land – Konglomeratodden (O-L161319); without locality (Fries 1860).
- **Bilimbia lobulata* (Sommerf.) Hafellner *et* Coppins – **8** (KPABG-13353), on calcareous soil. Widely distributed throughout Svalbard common species on calcareous soil (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Węgrzyn *et al.* 2015; Breuss 2017; Wietrzyk-Pelka *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- **Blastenia ammiopila* (Wahlenb.) Arup *et al.* – **1** (KPABG-13338-13340, 13389), **4** (KPABG-13169, 13409), **5** (KPABG-13351), **7** (KPABG-13355), on soil, plant debris and driftwood. Widely distributed throughout Svalbard and common (Elvebakk and Hertel 1996; Söchting

- et al.* 2008; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Węgrzyn *et al.* 2015, 2019; Breuss 2017; Wietrzyk *et al.* 2017; Wietrzyk-Pelka *et al.* 2018, 2021; Inoue *et al.* 2019; Konoreva and Chesnokov 2021; SLD).
- Bryocaulon divergens* (Ach.) Kärnefelt – **3** (KPABG-13217), **14** (O-L150568), **16** (O-L125380), on soil among mosses in dry places. Widely distributed throughout Svalbard and common (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Bryocaulon hyperborea* Øvstedal – without localities (Øvstedal *et al.* 2009), among bryophytes. Rare in Svalbard. Known from only Barentsøya and Nordaustlandet – Rijpfjorden (Øvstedal *et al.* 2009).
- Byronora septentrionalis* Holt.-Hartw. – **3** (KPABG-13219), **15** (O-L138287), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva and Chesnokov 2018, 2021; Konoreva *et al.* 2019b; SLD).
- **Bryoplaca jungermanniae* (Vahl) Söchting *et al.* – **4** (KPABG-13166), on mosses and plant debris. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Söchting *et al.* 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Konoreva 2011; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva and Chesnokov 2018, 2021; SLD).
- **Bryoplaca tetraspora* (Nyl.) Söchting *et al.* – **6** (KPABG-13364, 13365), **12** (KPABG-13214), on mosses and plant debris. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Söchting *et al.* 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- Bryoria chalybeiformis* (L.) Brodo *et D.* Hawksw. – **13** (O-L126292), **16** (O-L126994), among mosses on rock and on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; SLD).
- **Bryostigma lapidicola* (Tayl.) S.Y.Kondr. *et J.-S.* Hur – **1** (KPABG-13385), on small siliceous stones on the swampy coast. Rare in Svalbard. Known from a few scattered sites of Svalbard: Lomfjorden and Brennevinnsfjorden (Fries 1867), Haakon VII Land – Bockfjorden as var. *runderella* (Hafellner 1982); Nordenskiöld Land – Adventdalen (Øvstedal *et al.* 2009), Rieperbreen (Wietrzyk-Pelka *et al.* 2018); Nathorst Land – Hesselmannodden (Øvstedal *et al.* 2009); Dickson Land – Svenbreen (Wietrzyk-Pelka *et al.* 2018).
- **Buellia badia* (Fr.) A. Massal. – **4** (KPABG-13156, 13195), on siliceous stones on seashore colony of birds. Rare in Svalbard. Probably widely distributed throughout Svalbard, but currently known from a few scattered sites of Svalbard: Nordenskiöld Land – Blåhuken (Øvstedal *et al.* 2009), Longyearbreen (Wietrzyk *et al.* 2017); Nordaustlandet – Wahlenbergfjorden (Øvstedal *et al.* 2009), Nathorst Land – Forsbladhamna (as *Buellia* cf. *badia*, O-L129848).
- **Buellia ectolechioides* (Vain.) Erichsen – **4** (KPABG-13410), on siliceous stone. Rare in Svalbard. Known from a few scattered sites of Svalbard: Bellsund, Isfjorden (Lyngø 1940); Amsterdamøya – Søre Salatberget (Hertel and Ullrich 1976); Nathorst Land – Ullahamna; Kong Karls Land – Hårfagrehaugen (Øvstedal *et al.* 2009); Nordenskiöld Land – Adventdalen (as *Buellia* cf. *ectolechioides* O-L116710).
- !*Buellia schaereri* De Not. – **1** (KPABG-13149), on driftwood. Reported to the first time from Svalbard. Rare in the Arctic. In the Arctic known from Kola Peninsula and Polar Ural (Kristinsson *et al.* 2010). It characterized by the indistinct thallus, and small apothecia with small, pale brown spores ($6-11 \times 3-4 \mu\text{m}$). *Buellia schaereri* can be confused with *Amandinea punctata* (Hoffm.) Coppins & Scheid. but the latter has more ascospore ($12-15 \times 6-8 \mu\text{m}$) (Foucard *et al.* 2002).
- Caloplaca cerina* (Hedw.) Th. Fr. – **16** (O-L150747). There is no substrate data for this specimens in the Svalbard Lichens Database. Probably widely distributed throughout Svalbard. More thorough research is needed on the *Caloplaca cerina*-group in Svalbard.

- **Caloplaca spitsbergensis* H. Magn. – **1** (KPABG-13149), on driftwood. Widely distributed throughout Svalbard and it has been found on old driftwood (Elvebakk and Hertel 1996; Osyczka and Węgrzyn 2008; Söchting *et al.* 2008; Øvstedal *et al.* 2009; Węgrzyn *et al.* 2015; Konoreva *et al.* 2019b; SLD).
- **Caloplaca stillicidiorum* (Vahl) Lynge – **4** (KPABG-13155, 13164, 13196, 13407, 13413, 13432), **8** (KPABG-13187, 13354), **12** (KPABG-13214), on soil, mosses, plant debris and driftwood. Probably widely distributed throughout Svalbard and common, but is often confused with *Caloplaca cerina* (Hedw.) Th. Fr. from which it differs by substratum specificity. So *Caloplaca cerina* grows on the bark of trees and shrubs, and *C. stillicidiorum* s. lat. growing on or near the ground on various substrata such as mosses, soil, plant debris, horns, bones and driftwood (Šoun *et al.* 2011). Øvstedal *et al.* (2009) report that *C. cerina* is “one of the most common muscicolous species”, this ecological feature is typical for *C. stillicidiorum* s. lat.
- Calvitimela armeniaca* (DC.) Hafellner – **16** (O-L135307), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Breuss 2017; Konoreva and Chesnokov 2021; SLD).
- Calvitimela melaleuca* (Sommerf.) M.P. Andreev – **14** (O-L132444), on siliceous stone. Widely distributed throughout Svalbard (Øvstedal *et al.* 2009; SLD).
- **Candelariella aurella* (Hoffm.) Zahlbr. – **4** (KPABG-13154, 13395, 13400, 13418), **12** (KPABG-13216), on sandstones, siliceous stones on seashore colony of birds. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Osyczka and Węgrzyn 2008; Øvstedal *et al.* 2009; Konoreva 2011; Breuss 2017; Wietrzyk *et al.* 2017; Maciejowski *et al.* 2018; Konoreva and Chesnokov 2021; SLD).
- **Candelariella borealis* M. Westb. – **4** (KPABG-13196), on soil on seashore colony of birds. Rare in Svalbard. Reported to the third time from Svalbard. Previously reported from Nordaustlandet – Damflya (Konoreva *et al.* 2019b) and Innvika Bay (Konoreva, Chenokov 2021). *Candelariella borealis* very similar to *C. placodizans* (Nyl.) H. Magn., but distinguish by larger and darker yellow thallus with a smooth surface and squamules uneven with swollen tips (Westberg 2007).
- **Candelariella vitellina* (Hoffm.) Müll. Arg. – **4** (KPABG-13169, 13396, 13397, 13399, 13402, 13406, 13426, 13436), **9** (KPABG-13359), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Osyczka and Węgrzyn 2008; Øvstedal *et al.* 2009; Ziaja *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- Cetraria aculeata* (Schreb.) Fr. – **13** (O-L125920), **14** (O-L125833, O-L130063), **16** (O-L130224), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva 2011; Singh and Ravindra 2013; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- **Cetraria ericetorum* Opiz – **5** (KPABG-13173), **7** (KPABG-13179), on soil and among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Singh and Ravindra 2013; Wietrzyk *et al.* 2017; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Cetraria islandica* (L.) Ach. – **1** (KPABG-13226), **2** (KPABG-13206), **3** (KPABG-13219), **5** (KPABG-13171), **15** (O-L150452, O-L163035), **16** (O-L162805), on soil and among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Cooper and Wookey 2001; Krzewicka and Maciejowski 2008; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).

- Cetraria muricata* (Ach.) Eckfeldt – **5** (KPABG-13172), **16** (O-L132393), on soil and among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Breuss 2017; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Cetrariella delisei* (Bory ex Schaer.) Kärnefelt *et* Thell – **2** (KPABG-13211), **14** (O-L128860), **15** (O-L162989), on soil and among mosses, in wet places. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Cooper and Wookey 2001; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Wietrzyk-Pelka *et al.* 2018, 2021; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).
- **Cetrariella fastigiata* (Delise ex Nyl.) Kärnefelt *et* Thell – **3** (KPABG-13217), on soil among mosses. Widely distributed throughout Svalbard, although it is far less common than *C. delisei* (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Singh and Ravindra 2013; Inoue *et al.* 2019; SLD).
- Cladonia acuminata* (Ach.) Norrl. – **15** (O-L150463), on soil. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva *et al.* 2019b; SLD).
- Cladonia amaurocraea* (Flörke) Schaer. – **2** (KPABG-13211), **3** (KPABG-13221), **5** (KPABG-13227), **15** (O-L128873), **16** (O-L150731), on soil among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Cladonia bellidiflora* (Ach.) Schaer. – **15** (O-L148504), on soil and among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Øvstedal *et al.* 2009; Konoreva *et al.* 2019b; SLD).
- Cladonia borealis* S. Stenroos – **16** (O-L150466), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Øvstedal *et al.* 2009; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Cladonia chlorophaea* (Flörke ex Sommerf.) Spreng. – **15** (O-L138292), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018, 2021; Inoue *et al.* 2019; SLD).
- Cladonia coccifera* (L.) Willd. – **2** (KPABG-13207, 13211), **3** (KPABG-13217, 13219, 13220), **5** (KPABG-13171, 13227), **15** (O-L130067), on soil among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Wietrzyk-Pelka *et al.* 2018; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).
- Cladonia cyanipes* (Sommerf.) Nyl. – **14** (O-L130230), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; SLD).
- Cladonia gracilis* (L.) Willd. – **1** (KPABG-13152, 13226, 13374, 13387, 13388), **2** (KPABG-13206, 13211), **5** (KPABG-13171), **6** (KPABG-13366), **11** (KPABG-13223), **14** (O-L168879), **15** (O-L130069, O-L168818), on soil among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018; Konoreva *et al.* 2019b; SLD).
- Cladonia gracilis* ssp. *elongata* (Wulfen) Vain. – **16** (O-L138843), on soil among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Øvstedal *et al.* 2009; Konoreva and Chesnokov 2021; SLD).

- Cladonia* cf. *islandica* Kristinsson & Ahti ined. – **14** (O; Øvstedal *et al.* 2009), on soil among mosses. Rare in Svalbard. Known from only Barentsøya and Nordaustlandet – Rijpfjorden, Brennevinsfjorden (Øvstedal *et al.* 2009).
- Cladonia macrophyllodes* Nyl. – **16** (O-L124801), on soil among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Maciejowski *et al.* 2018; SLD).
- Cladonia mitis* Sandst. – **1** (KPABG-13226, 13388), **3** (KPABG-13217), **11** (KPABG-13223), **14** (O-L134728), on soil among mosses. Widespread along the whole coast of Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).
- Cladonia phyllophora* Hoffm. – **15** (O-L128885), **16** (O-L150622), on soil among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Breuss 2017; SLD).
- **Cladonia pocillum* (Ach.) Grognot – **1** (KPABG-13144, 13225), **5** (KPABG-13173), **8** (KPABG-13178, 13186, 13230), on calcareous soil and on mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Breuss 2017; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Cladonia pyxidata* (L.) Hoffm. – **2** (KPABG-13204, 13207), **3** (KPABG-13220), **4** (KPABG-13198), **6** (KPABG-13366), **13** (O-L168882), **15** (O-L148471, O-L168821), **16** (O-L131951), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018, 2021; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).
- Cladonia squamosa* Hoffm. – **14** (O-L128874), as tufts in moss pollsters. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Wietrzyk-Pelka *et al.* 2018; SLD).
- Cladonia stricta* (Nyl.) Nyl. – **13** (O-L148455), **14** (O-L148463, O-L168724), **15** (O-L148462, O-L171515), on soil among mosses. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Cladonia subulata* (L.) Weber ex F. H. Wigg. – **14** (O-L150557, O-L168770), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka 2006; Øvstedal *et al.* 2009; Maciejowski *et al.* 2018; SLD).
- Collembopodium sublitorale* (Leight.) Grube et B. D. Ryan – **14** (O-L150011), on barnacles. Rare in Svalbard. Known from only Barentsøya (Øvstedal *et al.* 2009).
- **Dermatocarpon polyphyllizum* (Nyl.) Blomb. et Forssell – **12** (KPABG-13369), on wet rock. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; SLD).
- **Farnoldia micropsis* (A. Massal.) Hertel – **12** (KPABG-13370), on limestone. Known from a few scattered sites of Svalbard: Hinlopenstretet (Fries 1867); Bjørnøya (Lyng 1926); Amsterdamøya (Hertel and Ullrich 1976); Oscar II Land – Ny-Ålesund area (Hertel 1977a), Beach from Brandalpynten to Stuphallet, Bayelva (Breuss 2017); Axeløya; Dickson Land – Lyckholmdalen (Øvstedal *et al.* 2009); Nordaustlandet – Innvika Bay (Konoreva and Chesnokov 2021).
- Flavocetraria cucullata* (Bellardi) Kärnefelt et A. Thell – **11** (KPABG-13223, 13347), **13** (O-L162979), on soil among mosses. Widely distributed throughout Svalbard (Elvebakk and

- Hertel 1996; Cooper and Wookey 2001; Øvstedal *et al.* 2009; Konoreva 2011; Singh and Ravindra 2013; Breuss 2017; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; Konoreva and Chesnokov 2021; SLD).
- Flavocetraria nivalis* (L.) Kärnefelt *et al.* Thell – **15** (O-L150457), **16** (O-L162807), on soil among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Cooper and Wookey 2001; Krzewicka and Maciejowski 2008; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Konoreva 2011; Singh and Ravindra 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).
- Fuscopannaria abscondita* P. M. Jørg. – **14** (O-L1224), among mosses in a moist habitat. Rare in Svalbard. The species was described from the Barentsøya (Jørgensen and Zhurbenko 2002) and known from a few scattered sites of Svalbard: Egdeøya – Rosenbergdalen (Øvstedal *et al.* 2009), Dickson Land – Kapp Thordsen (as *Fuscopannaria abscondita*, O-L163052).
- Fuscopannaria praetermissa* (Nyl.) P. M. Jørg. – **16** (O-L138305), on bryophytes on base-rich soil. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Breuss 2017; SLD).
- **Gyalolechia bracteata* (Hoffm.) A. Massal. – **8** (KPABG-13178), on soil on mossy slope. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Zhurbenko and Brackel 2013; Wietrzyk-Pelka *et al.* 2018; Konoreva and Chesnokov 2021; SLD).
- **Henrica melaspora* (Taylor) S. Savić *et al.* Tibell – **9** (KPABG-13228), on small siliceous stone under rock. Rare in Svalbard. Known from a few scattered sites of Svalbard: Bjørnøya (Lyngé 1926), Brøggerhalvøya – Ny-Ålesund area (Hertel 1977a), Gludneset (Øvstedal *et al.* 2009); Nordenskiöld Land – Kapp Linné (Øvstedal *et al.* 2009), Rieperbreen; Oskar II Land – Irenebreen (Wietrzyk *et al.* 2017); Nordaustlandet – Damflya (Konoreva *et al.* 2019b), Innvika Bay (Konoreva and Chesnokov 2021).
- Henrica theleodes* (Sommerf.) Savić *et al.* – **13** (O-L162854), on base rock. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Wietrzyk *et al.* 2016, 2017; Breuss 2017; SLD).
- Hymenelia heteromorpha* (Kremp.) Lutzoni – **12** (KPABG-13370), **15** (O-L126325), on sandstones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Breuss 2017; SLD).
- **Illosporium carneum* Fr. – **4** (KPABG-13167), on thallus of *Peltigera didactyla*. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Konoreva *et al.* 2019b; SLD).
- **Ionaspis lacustris* (With.) Lutzoni – **7** (KPABG-13188), on wet stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Breuss 2017; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- **Japewia tornoensis* (Nyl.) Tønsberg – **1** (KPABG-13153), **3** (KPABG-13219), on plant debris, soil and wood. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Breuss 2017; Wietrzyk-Pelka *et al.* 2018; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Lecanora atromarginata* (H. Magn.) Hertel *et al.* Rambold – **15** (O-L150079), on rock, mostly calcareous sandstone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Wietrzyk *et al.* 2017; SLD).
- Lecanora cenisia* Ach. – **13** (O-L127774), **15** (O-L126375, O-L127032), on rock. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva and Chesnokov 2018; Konoreva *et al.* 2019b; SLD).
- Lecanora epibryon* (Ach.) Ach. – **1** (KPABG-13225, 13389), **5** (KPABG-13174), **8** (KPABG-13186), **14** (O-L138857), **16** (O-L168707), on mosses and soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.*

- 2009; Redchenko *et al.* 2010; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Lecanora intricata* (Ach.) Ach. – **1** (KPABG-13377, 13382), **4** (KPABG-13154, 13396, 13403), **10** (KPABG-13189), **15** (O-L128303), on siliceous stones. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- **Lecanora orae-frigidae* R. Sant. – **1** (KPABG-13153), on driftwood. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka and Węgrzyn 2008; Øvstedal *et al.* 2009; Węgrzyn *et al.* 2015; Konoreva *et al.* 2019b; SLD).
- Lecanora polytropia* (Ehrh. ex Hoffm.) Rabenh. – **1** (KPABG-13376, 13382, 13385), **4** (KPABG-13159, 13393, 13394, 13399, 13403, 13406, 13410, 13420, 13428), **5** (KPABG-13176), **10** (KPABG-13191, 13192), **13** (O-L149977), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Ziaja *et al.* 2009; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- **Lecidea atrobrunnea* (Ramond ex Lam. et DC.) Schaer. – **1** (KPABG-13381), **4** (KPABG-13159, 13393, 13394, 13397), on siliceous stones on coast. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Ziaja *et al.* 2009; Konoreva 2011; Breuss 2017; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- **Lecidea confluens* (Weber) Ach. – **4** (KPABG-13428), on siliceous stone. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; SLD).
- Lecidea lapicida* (Ach.) Ach. – **14** (O-L128051), **15** (O-L125395), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Wietrzyk *et al.* 2017; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- **Lecidea lapicida* var. *pantherina* Ach. – **1** (KPABG-13378), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva and Chesnokov 2021; SLD).
- **Lecidea plana* (J. Lahm) Nyl. – **4** (KPABG-13398, 13404), on siliceous stone. Known from a few scattered sites of Svalbard: Nordenskiöld Land – Marmierfjellet (Lyng 1940), Adventfjorden (O-L168970); Haakon VII Land – Bockfjorden (Schuhwerk 1992); Danskøya – Kobbefjorden (O-L139737); Nordaustlandet – Damflya (Konoreva *et al.* 2019b); Sørkapp Land – Gåsbreen (Wietrzyk *et al.* 2016), Tvillingtoppen, Daudbjørnpynnten (Maciejowski *et al.* 2018); Oskar II Land – Ny-Ålesund (Inoue *et al.* 2019).
- **Lecidea ramulosa* Th. Fr. – **1** (KPABG-13147, 13386), **8** (KPABG-13178), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Wietrzyk-Pelka *et al.* 2018, 2021; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Lecidea silacea* (Hoffm.) Ach. – **16** (O-L171731), on metal-rich, siliceous rock. Rare in Svalbard. Known from a few scattered sites of Svalbard: Sørkapp Land (Olech 1990); Nordenskiöld Land – Longyearbyen (Hertel 1977a), Nordenskiöldfjellet (Breuss 2017), Colesdalen (Øvstedal *et al.* 2009); Nordaustlandet – Damflya (Konoreva *et al.* 2019b).
- Lecidella elaeochroma* (Ach.) M. Choisy – **14** (O-L125403), on driftwood. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Węgrzyn *et al.* 2015; Breuss 2017; Konoreva *et al.* 2019b; SLD).

- **Lecidella euphorea* (Flörke) Hertel – **1** (KPABG-13338), on driftwood. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Węgrzyn *et al.* 2015; Breuss 2017; Konoreva *et al.* 2019b; SLD).
- **Lecidella wulfenii* (Hepp.) Körb. – **5** (KPABG-13170), over mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Wietrzyk *et al.* 2017; Breuss 2017; Wietrzyk-Pelka *et al.* 2018; SLD).
- Lecidoma demissum* (Rutstr.) Gotth. Schneid. *et* Hertel – **14** (O-L150489), on soil. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- **Lendemerella exsecuta* (Nyl.) S.Y. Kondr. – **7** (KPABG-13188), on siliceous stone. Known from a few scattered sites of Svalbard: Nordenskiöld Land – Longyeardalen, Reindalen, Oskar II Land – Brøggerhalvøya (Søchting *et al.* 2008), Kaffiøyra (Węgrzyn *et al.* 2015), Bjørnøya as *Blastenia arctica* (Lyngby 1926), Haakon VII Land – Möllerfjorden (Søchting 1989); Sørkapp Land – Tvillingtoppen (Maciejowski *et al.* 2018); Nordaustlandet – Innvika Bay (Konoreva and Chesnokov 2021).
- **Lendemerella nivalis* (Körb.) S.Y. Kondr. – **7** (KPABG-13177), on epilithic mosses. Rare in Svalbard. Known from a few scattered sites of Svalbard: Albert I Land – Mitrahallvøya (Søchting *et al.* 2008), Keisar Wilhelmshøgda (Elvebakk 1984); Sørkapp Land (Olech 1990); Nordaustlandet – Damflya (Konoreva *et al.* 2019b); Oskar II Land – Irenebreen (Wietrzyk *et al.* 2017).
- **Lendemerella tornøensis* (H. Magn.) S.Y. Kondr. – **5** (KPABG-13351), on soil and mosses. Rare in Svalbard. Known from a few scattered sites of Svalbard: Sabine Land – Sassendalen (Søchting *et al.* 2008); Dickson Land – Petuniabukta (Redchenko *et al.* 2010); Sørkapp Land – Hedgehogfjellet (Maciejowski *et al.* 2018); Nordaustlandet – Damflya (Konoreva *et al.* 2019b), Innvika Bay (Konoreva and Chesnokov 2021); Nordenskiöld Land – Reindalen (Søchting 1992); Funglesongen Nordvestøyane – Ytre Norskøya (O-L160168).
- **Lepraria neglecta* (Nyl.) Lettau – **4** (KPABG-13429), **6** (KPABG-13363), **10** (KPABG-13348), **11** (KPABG-13223), on soil and mosses. Spot tests: K+ yellow, C+ reddish orange, KC+ reddish orange, Pd+ lemon yellow; contains alecortic acid and angardianic/roccellic acid (Øvstedal *et al.* 2009, Saag *et al.* 2009). *Lepraria neglecta* may resemble *L. gelida*, but is distinct by its bluish colour, the presence of granular soredia, absence of a medulla, and presence of a fatty acid (Øvstedal *et al.* 2009, Saag *et al.* 2009). Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Lepraria rigidula* (de Lesd.) Tønberg – **15** (O; Øvstedal *et al.* 2009), on mosses. Rare in Svalbard. Known from only Barentsøya and Nordenskiöld Land – along the road between Longyearbyen and Bjørndalen (Øvstedal *et al.* 2009) and Sørkapp Land – Hedgehogfjellet, Daudbjørnpynten (Maciejowski *et al.* 2018).
- **Lichenomphalia umbellifera* (L.:Fr.) Redhead *et al.* – **2** (KPABG-13208), **3** (KPABG-13219), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva and Chesnokov 2018, 2021; SLD).
- **Lobaria linita* (Ach.) Rabenh. – **2** (KPABG-13203), **3** (KPABG-13221), **5** (KPABG-13171), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018; Konoreva *et al.* 2019b; SLD).
- **Lopadium coralloideum* (Nyl.) Lyngby – **6** (KPABG-13364), **7** (KPABG-13355), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Wietrzyk-Pelka *et al.* 2018, 2021; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).

- Lopadium pezizoideum* (Ach.) Körb. – **2** (KPABG-13211), **14** (O-L125842), **15** (O-L150563), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- **Megaspora verrucosa* (Ach.) Hafellner *et al.* V. Wirth – **1** (KPABG-13392), **4** (KPABG-13416), **5** (KPABG-13174), **8** (KPABG-13186, 13187, 13230), on soil and plant debris. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; SLD).
- Melanelia hepatizon* (Ach.) A. Thell – **7** (KPABG-13184), **13** (O-L130245), **15** (O-L150492), **16** (O-L130247), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva 2011; Konoreva and Chesnokov 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Melanelia stygia* (L.) Essl. – **7** (KPABG-13182), **10** (KPABG-13193), **14** (O-L134792), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva 2011; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Melanohalea elegantula* (Zahlbr.) O. Blanco *et al.* – **13** (O-L170341), on bird-manured cliffs. Rare in Svalbard. Known from a few scattered sites of Svalbard: Parryøya (O-L125843); Ny-Friesland – E of Austfjorden (Øvstedal *et al.* 2009).
- Melanohalea infumata* (Nyl.) O. Blanco *et al.* – **4** (KPABG-13162), **16** (O-L125413, O-L152956), on stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Breuss 2017; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- **Micarea incrassata* Hedl. – **1** (KPABG-13145, 13388), **5** (KPABG-13171), **6** (KPABG-13362), on soil. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Breuss 2017; Wietrzyk *et al.* 2017; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018, 2021; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Montanelia disjuncta* (Erichsen) Divakar *et al.* – **13** (O-L132403, O-L140500), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018; SLD).
- Montanelia sorediata* (Ach.) Divakar *et al.* – without localities (O; Øvstedal *et al.* 2009), on exposed rock. Widely distributed throughout Svalbard and common (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; SLD).
- Mycobilimbia* cf. *epixanthoides* (Nyl.) Vitik. *et al.* – **13** (O-L150782), on old bone. Only known from Barentsøya (Øvstedal *et al.* 2009).
- **Myriolecis dispersa* (Pers.) Śliwa *et al.* – **4** (KPABG-13405), on calcareous stone. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Konoreva 2011; Konoreva and Chesnokov 2018; SLD).
- **Myriolecis thuleana* (Poelt) Śliwa *et al.* – **4** (KPABG-13397, 13425), on bird-manured, siliceous rocks. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018; SLD).
- Myriolecis zosteræ* (Ach.) Śliwa *et al.* (= *Lecanora zosteræ* (Ach.) Nyl.) – **13** (O-L125393), **14** (O-L150648), on bones, driftwood and limestone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Węgrzyn *et al.* 2015; Wietrzyk-Pelka *et al.* 2018, 2021; Konoreva *et al.* 2019b; SLD).
- !*Myriolecis zosteræ* var. *palanderi* (Vain.) Śliwa – **4** (KPABG-13393, 13395, 13400, 13411, 13418, 13422), on bird-manured siliceous rocks. Reported to the first time from Svalbard. Probably widespread on Svalbard and in the Arctic, but not well understood to date (Śliwa 2007).

- Nephroma expallidum* (Nyl.) Nyl. – **13** (O-L127050, O-L127057, O-L127394, O-L131977), **15** (O-L127053, O-L127395, O-L130106), **16** (O-L126878), on calcareous soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Breuss 2017; Wietrzyk-Pelka *et al.* 2018; SLD).
- Ochrolechia frigida* (Sw.) Lynge – **1** (KPABG-13226, 13339, 13375, 13388, 13389), **2** (KPABG-13207), **3** (KPABG-13217, 13218, 13219, 13220), **4** (KPABG-13161, 13166, 13169, 13198, 13202, 13409, 13413, 13435), **5** (KPABG-13175), **6** (KPABG-13363), **7** (KPABG-13182, 13355, 13356), **8** (KPABG-13186), **10** (KPABG-13189), **12** (KPABG-13214, 13367, 13371), **15** (O-L138871), on soil, on stone, plant debris, mosses and driftwood. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018, 2021; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).
- Ochrolechia grimmiae* Lynge – **14** (O-L138222), on mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva and Chesnokov 2018; Konoreva *et al.* 2019b; SLD).
- Pannaria hookeri* (Borrer ex Sm.) Nyl. – **4** (KPABG-13165), **16** (O-L125930, O-L127828), on rock and soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva *et al.* 2019b; SLD).
- Parmelia omphalodes* (L.) Ach. – **14** (O-L126618), **15** (O-L152955), on rocks and over bryophytes. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva and Chesnokov 2018, 2021; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- Parmelia saxatilis* (L.) Ach. – **13** (O-L129900), **16** (O-L125847), on rocks and over bryophytes. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Osyczka and Węgrzyn 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Parmelia skultii* Hale – **1** (KPABG-13144), **3** (KPABG-13218), **5** (KPABG-13171), **13** (O-L125431), **15** (O-L125428, O-L125429), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Parmelia sulcata* Taylor – **16** (O-L129903), on rock and over bryophytes. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; SLD).
- **Parvoplaca tirolensis* (Zahlbr.) Arup *et al.* – **4** (KPABG-13166, 13196, 13414, 13430, 13434), **8** (KPABG-13187, 13354), **12** (KPABG-13214), on soil, mosses and plant debris. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Söchting *et al.* 2008; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Węgrzyn *et al.* 2015, 2019; Breuss 2017; Wietrzyk *et al.* 2017; Wietrzyk-Pelka *et al.* 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Peltigera aphthosa* (L.) Willd. – **2** (KPABG-13204), **5** (KPABG-13171), **13** (O-L127285, O-L127289, O-L130313), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Wietrzyk-Pelka *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Peltigera canina* (L.) Willd. – **1** (KPABG-13150), **13** (O-L126516), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Peltigera didactyla* (With.) J. R. Laundon – **4** (KPABG-13161, 13167, 13431), **13** (O-L127290, O-L131842, O-L131980), **16** (O-L168817), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008;

- Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Wietrzyk-Pelka *et al.* 2018; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).
- **Peltigera extenuata* (Nyl. ex Vain.) Lojka – **1** (KPABG-13143), **4** (KPABG-13197), **8** (KPABG-13187), on soil and mosses. Rare in Svalbard. Reported to the first time from Svalbard. Previously reported for Oskar II Land – Zeppelinfjellet (Breuss 2017); Nordaustlandet – Floraberget (Czernyadjeva *et al.* 2020). Probably widely distributed in the Arctic. *Peltigera extenuata* was previously considered a chemotype or variety of *P. didactyla*, but due to recent phylogenetic studies accepted as species. It differs from *P. didactyla* by pale, flocculent rhizines and gyrophoric acid in medulla (C+ red) (Vitikainen 2007).
- **Peltigera leucophlebia* (Nyl.) Gyeln. – **4** (KPABG-13202), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Wietrzyk-Pelka *et al.* 2018; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).
- **Peltigera lyngei* Gyeln. – **1** (KPABG-13143, 13148, 13387), **2** (KPABG-13209, 13210), **3** (KPABG-13219), **4** (KPABG-13158), **6** (KPABG-13361), on soil and mosses. Rare in Svalbard. Known from a few scattered sites of Svalbard: Danskøya – Kobbefjorden (Gyelnik 1932); Nordenskiöld Land – Sveagruva (as *P. malacea* var. *lyngei*; Eurola 1971), Grønfjorden (Vitikainen 1994; Urbanavichene and Koroleva 2008), Adventfjorden; Nordaustlandet – Nordkapp, Floraberget (Vitikainen 1994), Innvika Bay (Konoreva and Chesnokov 2021).
- **Peltigera malacea* (Ach.) Funck – **3** (KPABG-13219, 13220), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Peltigera neckeri* Hepp ex Müll. Arg. – **13** (O-L132414), on soil and mosses. Rare in Svalbard. Known from a few scattered sites of Svalbard: Wedel Jarlsberg Land – Recherchefjorden (as *P. polydactyloides* Nyl.; Lynge 1938); Hornsund (as *P. polydactyla* var. *crassoides* Gyeln.; Nowak 1965); Nordenskiöld Land and Ny-Friesland (Vitikainen 1994).
- Peltigera rufescens* (Weiss) Humb. – **1** (KPABG-13143, 13383, 13387), **8** (KPABG-13230), **13** (O-L132417), **15** (O-L127294), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018, 2021; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- Peltigera scabrosa* Th. Fr. – **2** (KPABG-13205), **14** (O-L126636, O-L132422, O-L132425), **15** (O-L132420), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018, 2021; Konoreva *et al.* 2019b; SLD).
- **Pertusaria geminipara* (Th. Fr.) C. Knight ex Brodo – **3** (KPABG-13220), **5** (KPABG-13349), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Pertusaria oculata* (Dicks.) Th. Fr. – **2** (KPABG-13211), **7** (KPABG-13181), **11** (KPABG-13223), **15** (O-L138813), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Phaeophyscia endococcina* (Körb.) Moberg – **13** (O-L153654), on damp rock faces. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Maciejowski *et al.* 2018; SLD).
- Phaeophyscia sciastra* (Ach.) Moberg – **13** (O-L126640), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Singh

- and Ravindra 2013; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva and Chesnokov 2018; Konoreva *et al.* 2019b; SLD).
- Physcia caesia* (Hoffm.) Fűrnr. – **4** (KPABG-13162, 13163, 13200, 13399, 13401, 13406, 13411, 13423), **16** (O-L154102), on bird-manured, siliceous rock. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Osyczka and Węgrzyn 2008; Øvstedal *et al.* 2009; Ziaja *et al.* 2009; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Węgrzyn *et al.* 2015; Wietrzyk *et al.* 2016, 2017; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Physcia dubia* (Hoffm.) Lettau – **4** (KPABG-13154, 13156, 13166, 13168, 13195, 13201, 13396, 13399, 13401, 13403, 13404-13406, 13411, 13413, 13417, 13420, 13422, 13423, 13432, 13436), **13** (O-L152926, O-L153962, O-L154063), **14** (O-L153964, O-L154064), **15** (O-L135343, O-L152925, O-L152954), **16** (O-L153600, O-L153994), on bird-manured, siliceous rock, over other lichens and bryophytes. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Physconia muscigena* (Ach.) Poelt – **4** (KPABG-13160, 13164, 13169, 13200, 13408, 13415, 13435), **5** (KPABG-13173), **13** (O-L138228), **16** (O-L153010, O-L153634), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva and Chesnokov 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- **Placynthium pulvinatum* Øvst. – **12** (KPABG-13216), in the cracks of boulders. Rare in Svalbard. Known from a few scattered sites of Svalbard: Nordenskiöld Land – Adventdalen, Endalen; Bünsow Land – Gipsdalen; Sabine Land – Sassendalen (Øvstedal *et al.* 2009).
- Polypblastia intermedia* Th. Fr. – **12** (KPABG-13370), **15** (O-L136504), on dolerite stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; SLD).
- Polycauliona candelaria* (L.) Frödén *et al.* – **15** (O-L150819), on bird-manured siliceous rock. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Breuss 2017; Konoreva and Chesnokov 2018; SLD).
- Polychidium muscicola* (Sw.) Gray – **13** (O-L127298), among mosses. Rare in Svalbard. Known from a few scattered sites of Svalbard: Nordenskiöld Land – Grønfjorden (Paulson 1928), W of Kapp Laila; Nathorst Land – Bromelldalen (Øvstedal *et al.* 2009); Nordaustlandet – Damflya (Konoreva *et al.* 2019b).
- **Porpidia flavicunda* (Ach.) Gowan – **10** (KPABG-13191), on siliceous stone. Widely distributed throughout Svalbard but it is not common (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Konoreva and Chesnokov 2018, 2021; SLD).
- Porpidia melinodes* (Körb.) Gowan *et al.* Ahti – **14** (O-L171645), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Konoreva 2011; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- **Protomicarea alpestris* (Sommerf.) McCune – **4** (KPABG-13412), **12** (KPABG-13215), on soil. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva *et al.* 2019b; SLD).
- Protopannaria pezizoides* (Weber) P. M. Jørg. *et al.* S. Ekman – **1** (KPABG-13151), **5** (KPABG-13175), **6** (KPABG-13364), **15** (O-L150579, O-L153626), **16** (O-L125931, O-L130329, O-L150797), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Wietrzyk-Pelka *et al.* 2018, 2021; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).

- Protoparmelia badia* (Hoffm.) Hafellner – **12** (KPABG-13342), **15** (O-L150400), **16** (O-L162833), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Wietrzyk *et al.* 2017; Konoreva *et al.* 2019b; SLD).
- Pseudephebe minuscula* (Nyl. ex Arnold) Brodo *et al.* D. Hawksw. – **1** (KPABG-13377, 13384), **4** (KPABG-13394), **10** (KPABG-13189), **13** (O-L125430), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Pseudephebe pubescens* (L.) M. Choisy – **4** (KPABG-13159), **7** (KPABG-13185), **10** (KPABG-13189), **12** (KPABG-13216), **14** (O-L138329, O-L153631), **15** (O-L126894), **16** (O-L126895, O-L140561), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Konoreva 2011; Singh and Ravindra 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- Psoroma hypnorum* (Vahl) Gray – **2** (KPABG-13211), **3** (KPABG-13218), **5** (KPABG-13227), **10** (KPABG-13190), **15** (O-L138333), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).
- **Psoroma tenue* var. *boreale* Henssen – **4** (KPABG-13155, 13166, 13202, 13407), **6** (KPABG-13364), **12** (KPABG-13212, 13214, 13367), on soil. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Breuss 2017; SLD).
- Rhexophiale rhexoblephara* (Nyl.) Hellb. – **5** (KPABG-13227), **13** (O-L138242, O-L138338), on soil. Rare in Svalbard. Known from a few scattered sites of Svalbard: Sjuøyane (Elvebakk and Hertel 1996); Nordenskiöld Land – Grønfjordfjellet (Vězda 1967, Urbanavichene and Koroleva 2008); Oskar II Land – Ny-Ålesund (Øvstedal *et al.* 2009); Nordaustlandet – Damflya (Konoreva *et al.* 2019b), Innvika Bay (Konoreva and Chesnokov 2021); Kongsfjorden – ved Gåsølv (BG-L69811).
- **Rhizocarpon anseris* Lyngb. – **1** (KPABG-13378, 13380-13382, 13384), on shale. Rare in Svalbard. Reported to the second time from Svalbard. Previously reported from Nordenskiöld Land – Barentsburg (Øvstedal *et al.* 2009).
- Rhizocarpon copelandii* (Körb.) Th. Fr. – **15** (O-L136571, O-L138883), on siliceous stone. Widely distributed throughout Svalbard and common (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Rhizocarpon dahliae* Øvstedal – **13** (O; Øvstedal *et al.* 2009), on prothallus of *R. geographicum*. Rare in Svalbard. The species was described from the Barentsøya (Øvstedal *et al.* 2009) and known from the holotype and Nordenskiöld Land – Björndalen (Breuss 2017).
- **Rhizocarpon disporum* (Nägeli ex Hepp) Müll. Arg. – **1** (KPABG-13379, 13382, 13385), on siliceous stones. *Rhizocarpon disporum* can be confused with *R. geminatum*, but different from the latter by single-spored asci and medulla Pd+ orange (Foucard 2001). Elvebakk and Hertel (1996) report that there is no confirmed data on the distribution about *R. disporum*. Øvstedal *et al.* (2009) does not report this species to Svalbard, although there are many entries on Svalbard Lichens Database. Probably widely distributed throughout Svalbard as well as *R. geminatum*, but it seems it needs revision.
- Rhizocarpon ferax* H. Magn. – **9** (KPABG-13359), **13** (O-L1199), on siliceous stones. Widely distributed throughout Svalbard and not common (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Breuss 2017; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).

- !Rhizocarpon furfurosum* H. Magn. et Poelt – **1** (KPABG-13385), on shale. Reported to the first time from Svalbard. It is characterized by dull ochre-brown to dark-grey, matt, areoles, which are densely and often completely covered with small fragile blastidia. Apothecia not seen. Known from British Isles, Scandinavia and Central Europe (Smith *et al.* 2009).
- **Rhizocarpon geminatum* Korb. – **4** (KPABG-13154), **7** (KPABG-13188), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Wietrzyk *et al.* 2016; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- **Rhizocarpon geographicum* (L.) DC. – **7** (KPABG-13188), **9** (KPABG-13358, 13359), **10** (KPABG-13191, 13192), **11** (KPABG-13222, 13344), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- **Rhizocarpon grande* (Flörke) Arnold – **9** (KPABG-13358), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Wietrzyk *et al.* 2017; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- **Rhizocarpon hochstetteri* (Korb.) Vain. – **9** (KPABG-13359), on siliceous stones. Sporadically distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Wietrzyk *et al.* 2017; Maciejowski *et al.* 2018; Konoreva and Chesnokov 2021; SLD).
- !Rhizocarpon leptolepis* Anzi – **1** (KPABG-13379), on siliceous stone. Reported to the first time from Svalbard. *Rhizocarpon leptolepis* is characterized by brown to red-brown, convex to slightly squamulose, smooth, with a whitish pruinose areoles and brown muriform ascospores (Foucard 2001). Known from Central and Northern Europe (Dobrysh 2003), European Russia, Southern Siberia and Russian Far East (Urbanavichus 2010).
- Rhizoplaca melanophthalma* (DC.) Leuckert et Poelt – **4** (KPABG-13156, 13162, 13169, 13196, 13419, 13427), **13** (O-L168510), **16** (O-L168512), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Inoue *et al.* 2019; SLD).
- **Rinodina archaea* (Ach.) Arnold – **1** (KPABG-13146, 13339, 13340), on driftwood. Known from a few scattered sites of Svalbard: Bjørnøya (Lyng 1926); Albert I Land – Magdalenefjorden; Nordenskiöld Land – Grønfjorden (Øvstedal *et al.* 2009), Colesdalen (Konoreva and Chesnokov 2018); Wedel Jarlsberg Land – Hyttevika (Osyczka and Wegrzyn 2008); Oskar II Land – Kaffiøyra Plain (Wegrzyn *et al.* 2015); Nordaustlandet – Damflya (Konoreva *et al.* 2019b).
- Rinodina olivaceobrunnea* C. W. Dodge et G. E. Baker – **4** (KPABG-13409), **5** (KPABG-13171), **6** (KPABG-13364), **15** (O-L125453), on soil and plant debris. Known from a few scattered sites of Svalbard: Nordenskiöld Land – Grønfjorden (Urbanavichene and Koroleva 2008), Longyearbyen (Zhurbenko and Brackel 2013); Sørkapp Land; Haakon VII Land – Liefdefjorden (Øvstedal *et al.* 2009); Nordaustlandet – Damflya (Konoreva *et al.* 2019b); Oskar II Land – Ny-Ålesund (as *Rinodina* cf. *olivaceobrunnea*, Inoue *et al.* 2019).
- **Rinodina roscida* (Sommerf.) Arnold – **8** (KPABG-13186, 13187), **12** (KPABG-13214), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Konoreva 2011; Breuss 2017; Wietrzyk-Pelka *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- **Rinodina terrestris* Tomin – **8** (KPABG-13354), on soil. Rare in Svalbard. Known from a few scattered sites of Svalbard: Danskøya – Kobbefjorden (Øvstedal *et al.* 2009); Ny-Friesland – Austbotnhytta (BG-L94924); Nordaustlandet – Innvika Bay (Konoreva and Chesnokov 2021).

- **Rinodina turfacea* (Wahlenb.) Körb. – **4** (KPABG-13196, 13202, 13409, 13433), **11** (KPABG-13346), on soil and mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka and Węgrzyn 2008; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Wietrzyk-Pelka *et al.* 2018, 2021; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; Konoreva and Chesnokov 2021; SLD).
- **Rostania ceranisca* (Nyl.) Otálora *et al.* – **8** (KPABG-13354), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Zhurbenko and Brackel 2013; Węgrzyn *et al.* 2015, 2019; Breuss 2017; Wietrzyk *et al.* 2017; Wietrzyk-Pelka *et al.* 2018, 2021; Inoue *et al.* 2019; SLD).
- Rusavskia elegans* (Link) S.Y. Kondr. *et* Kärnefelt – **4** (KPABG-13157, 13168, 13195, 13201, 13393, 13403-13405, 13411, 13421, 13426, 13432, 13425), **5** (KPABG-13176), **13** (O-L136507), **15** (O-L135142), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Osyczka and Węgrzyn 2008; Øvstedal *et al.* 2009; Ziaja *et al.* 2009; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Węgrzyn *et al.* 2015; Wietrzyk *et al.* 2016, 2017; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- **Rusavskia soledata* (Vain.) S.Y. Kondr. *et* Kärnefelt – **8** (KPABG-13183), **12** (KPABG-13216), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Konoreva 2011; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Sagedia mastrucata* (Wahlenb.) A. Nordin *et al.* (= *Aspicilia mastrucata* (Wahlenb.) Th. Fr.) – **13** (O-L126255), **15** (O-L127858), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; SLD).
- Santessoniella arctophila* (Th. Fr.) Henssen – **14** (O-L126898), on soil. Rare in Svalbard. Known from a few scattered sites of Svalbard: Bjørnøya (Lyngse 1926); Haakon VII Land – Liefdefjorden (Øvstedal *et al.* 2009); Nordenskiöld Land – Reindalen (TROM-L561386); Grønfjorden, Adventfjorden (Lyngse 1938); Hornsund, Isfjorden (Eurola 1968); Sørkapp Land (Olech 1990).
- Scytinium* cf. *gelatinosum* (With.) Otálora *et al.* – **16** (O-L130240), on soil among mosses. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Wietrzyk-Pelka *et al.* 2018; SLD).
- **Scytinium imbricatum* (P.M. Jørg.) Otálora *et al.* – **12** (KPABG-13367), on calcareous soil. Rare in Svalbard. Known from a few scattered sites of Svalbard: Nordenskiöld Land – Grønfjorden (Urbanavichene and Koroleva 2008); Sabine Land – Moskusdalen (Øvstedal *et al.* 2009); Nathorst Land – Forsbladhamna (O-L124079) Wedel Jarlsberg Land – Camp Violet-Bergelufjellet (O-L124077); Albert I Land – Konglomeratodden (O-L124085, O-L124086); Haakon VII Land – at the base of Generalfjella (O-L124052).
- **Scytinium lichenoides* (L.) Otálora *et al.* – **12** (KPABG-13372), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; SLD).
- **Solorina bispora* Nyl. – **5** (KPABG-13351), on calcareous soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Wietrzyk-Pelka *et al.* 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Solorina crocea* (L.) Ach. – **1** (KPABG-13226, 13373), **2** (KPABG-13211), **5** (KPABG-13175), **15** (O-L168784, O-L168785), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).

- Solorina* cf. *saccata* (L.) Ach. – **16** (O-L128334, O-L128342), on calcareous soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Inoue *et al.* 2019; SLD).
- Solorina spongiosa* (Ach.) Anzi – **13** (O-L153035), on calcareous soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva and Chesnokov 2021; SLD).
- **Sphaerophorus fragilis* (L.) Pers. – **3** (KPABG-13218), **5** (KPABG-13171), on soil above stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018, 2021; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- Sphaerophorus globosus* (Huds.) Vain. – **1** (KPABG-13226, 13375), **2** (KPABG-13204), **11** (KPABG-13347), **13** (O-L153046), **15** (O-L130126), **16** (O-L125874), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- **Sporastatia polyspora* (Nyl.) Grunmann – **11** (KPABG-13343), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva and Chesnokov 2021; SLD).
- **Sporastatia testudinea* (Ach.) A. Massal. – **4** (KPABG-13394), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Breuss 2017; Konoreva and Chesnokov 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Sporodictyon arcticum* Savić *et* Tibell – **13** (O-L171629), on calcium containing stone. Rare in Svalbard. Known from Nordenskiöld Land – Adventfjord (Øvstedal *et al.* 2009), Nordenskiöldfjellet; Oskar II Land – Bayelva-Stromgebiet (Breuss 2017).
- Sporodictyon schaererianum* A. Massal. – **13** (O; Øvstedal *et al.* 2009), on sandstone. Rare in Svalbard. Known from a few scattered sites of Svalbard: Barentsøya; Kong Karls Land – Hårfagrehaugen (Øvstedal *et al.* 2009); Bjørnøya (Hafellner 2010); Nordenskiöld Land – Nordenskiöldfjellet, Trollsteinen (Breuss 2017), Rieperbreen (Wietrzyk *et al.* 2017; Wietrzyk-Pelka *et al.* 2018), Bolterdalen (Węgrzyn *et al.* 2019); Oskar II Land – Irenebreen (Wietrzyk *et al.* 2017); Dickson Land – Ferdinandbreen, Svenbreen (Wietrzyk-Pelka *et al.* 2018).
- Sporodictyon terrestre* (Th. Fr.) Savić *et* Tibell – **13** (O-L140533), **16** (O-L125151), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Breuss 2017; Wietrzyk *et al.* 2017; Wietrzyk-Pelka *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Stereocaulon alpinum* Laurer – **3** (KPABG-13218, 13220), **5** (KPABG-13171, 13227, 13352), **9** (KPABG-13357), **13** (O-L126541), **14** (O-L126548, O-L130264), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018; Konoreva *et al.* 2019b; Węgrzyn *et al.* 2019; SLD).
- Stereocaulon arcticum* Lyngé – **14** (O-L126557), soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Zhurbenko and Brackel 2013; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- Stereocaulon botryosum* Ach. – **11** (KPABG-13223), **13** (O-L125891), **14** (O-L126567, O-L132441), **15** (O-L130267), **16** (O-L125888, O-L125956, O-L126941, O-L130268, O-L150789), on siliceous stones, on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Zhurbenko and Brackel 2013; Breuss

- 2017; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- **Stereocaulon glareosum* (L. I. Savicz) H. Magn. – **1** (KPABG-13224), **7** (KPABG-13356), **10** (KPABG-13193), **12** (KPABG-13212), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva 2011; Breuss 2017; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018, 2021; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Stereocaulon groenlandicum* (E. Dahl) I.M. Lamb – **16** (O-L168843), on soil. Rare in Svalbard. Known from Nordenskiöld Land – west coast of Grønfjorden (Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013); Bünsow Land – near Norddammen Lake (Zhurbenko and Brackel 2013); Nordaustlandet – Murchisonfjorden (Zhurbenko 2010).
- Stereocaulon rivulorum* H. Magn. – **14** (O-L125894, O-L126579, O-L132019), **15** (O-L132017), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Zhurbenko and Brackel 2013; Wietrzyk *et al.* 2017; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018, 2021; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Stereocaulon vesuvianum* Pers. – **14** (O-L126585), on stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Singh and Ravindra 2013; SLD).
- **Tetramelas concinnus* (Th. Fr.) Giralt – **4** (KPABG-13402), on siliceous stone. Rare in Svalbard. Previously reported from Nordenskiöld Land – Adventdalen; Akseløya (Øvstedal *et al.* 2009).
- **Tetramelas insignis* (Nägeli ex Hepp) Kalb – **1** (KPABG-13390), **3** (KPABG-13218), **4** (KPABG-13403), **5** (KPABG-13171), **6** (KPABG-13229, 13364, 13365), **11** (KPABG-13223, 13347), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Osyczka and Węgrzyn 2008; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Wietrzyk-Pelka *et al.* 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Thamnotia vermicularis* (Sw.) Schaer. – **3** (KPABG-13218), **10** (KPABG-13190), **14** (O-L153608), **16** (O-L138416), on soil. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Redchenko *et al.* 2010; Konoreva 2011; Zhurbenko and Brackel 2013; Konoreva and Chesnokov 2018, 2021; Wietrzyk-Pelka *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Tremolecia atrata* (Ach.) Hertel – **1** (KPABG-13377, 13382, 13384, 13385), **4** (KPABG-13159), **7** (KPABG-13185, 13188), **9** (KPABG-13358, 13359), **11** (KPABG-13222, 13343), **15** (O-L138832, O-L150304), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Ziaja *et al.* 2009; Konoreva 2011; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- Umbilicaria arctica* (Ach.) Nyl. – **15** (O-L126950, O-L150530), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Breuss 2017; Wietrzyk *et al.* 2017; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- **Umbilicaria cylindrica* (L.) Delise ex Duby – **5** (KPABG-13350), **7** (KPABG-13180), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Konoreva 2011; Singh and Ravindra 2013; Zhurbenko and Brackel 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Umbilicaria decussata* (Vill.) Zahlbr. – **14** (O-L153054), **15** (O-L132033), **16** (O-L126614, O-L138891), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Konoreva 2011; Breuss

- 2017; Wietrzyk *et al.* 2017; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Umbilicaria hyperborea* (Ach.) Hoffm. – **4** (KPABG-13161), **7** (KPABG-13182), **14** (O-L153055), **16** (O-L126959), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Osyczka and Węgrzyn 2008; Øvstedal *et al.* 2009; Ziaja *et al.* 2009; Singh and Ravindra 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Inoue *et al.* 2019; Konoreva *et al.* 2019b; SLD).
- Umbilicaria krascheninnikovii* (Savicz) Zahlbr. – **13** (O-L125462), **16** (O-L127844), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Singh and Ravindra 2013; SLD).
- **Umbilicaria lyngei* Schol. – **4** (KPABG-13159), on siliceous stone. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; Konoreva and Chesnokov 2021; SLD).
- Umbilicaria proboscidea* (L.) Schrad. – **14** (O-L125900, O-L153062), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Krzewicka and Maciejowski 2008; Øvstedal *et al.* 2009; Konoreva 2011; Singh and Ravindra 2013; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Konoreva *et al.* 2019b; SLD).
- Umbilicaria torrefacta* (Lightf.) Schrad. – **14** (O-L130275), **16** (O-L126975), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Konoreva 2011; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018, 2021; Maciejowski *et al.* 2018; Konoreva *et al.* 2019b; SLD).
- Umbilicaria virginis* Schaer. – **15** (O-L138255, O-L138400), **16** (O-L138421), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Øvstedal *et al.* 2009; Ziaja *et al.* 2009; Singh and Ravindra 2013; Breuss 2017; Maciejowski *et al.* 2018; Konoreva and Chesnokov 2021; SLD).
- Usnea sphacelata* R. Br. (= *Neuropogon sphacelatus* (R. Br.) D.J. Galloway) – **10** (KPABG-13194), **16** (O-L138256), on siliceous stones. Widely distributed throughout Svalbard (Elvebakk and Hertel 1996; Urbanavichene and Koroleva 2008; Øvstedal *et al.* 2009; Konoreva 2011; Breuss 2017; Wietrzyk *et al.* 2017; Konoreva and Chesnokov 2018; Maciejowski *et al.* 2018; SLD).
- Vahlia hookerioides* (P.M. Jørg.) P.M. Jørg. – **13** (O-L170349), **14** (O-L170339), on siliceous stones, on soil. Rare in Svalbard. Known from James I land – Blomesletta (Øvstedal *et al.* 2009).
- **Xanthomendoza borealis* (R.Sant. et Poelt) Søchting *et al.* – **4** (KPABG-13423), on siliceous stone. Known from a few scattered sites of Svalbard: Amsterdamøya; Nordenskiöld Land – Longyearbyen (Elvebakk and Hertel 1996), Colesdalen (Konoreva and Chesnokov 2018); Nordaustlandet – Damflya (Konoreva *et al.* 2019b), Innvika Bay (Konoreva and Chesnokov 2021); Oskar II Land – Zeppelinfjellet (Breuss 2017); Indre Norskøya – Sabineodden (Øvstedal *et al.* 2009); Bünsow Land – Gipshuksletta (TROM-L564667); Andree Land – Munningen av Kartdalen (O-L127847).

Rejected taxa

- Cladonia cervicornis* (Ach.) Flot. – **14** (O-L148507), **15** (O-L171489), on soil. Reported by Lynge (1938), but has been rejected from the Svalbard flora by Øvstedal *et al.* (2009) after revision of the herbarium specimens. According to Osyczka (2006) the species it has rather Mediterranean and sub-Atlantic type of distribution.
- Lecanora* cf. *flotoviana* Spreng. – **16** (O-L125392), on stone. According to Śliwa (2007) this taxon does not occur in the Arctic. After revision of the herbarium Øvstedal *et al.* (2009) refer specimens of this species to either *Myriolecis zosteræ*, *M. dispersa* s.str. or *M. semipallida*.